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Ministry of Health and Family Welfare, Government of India

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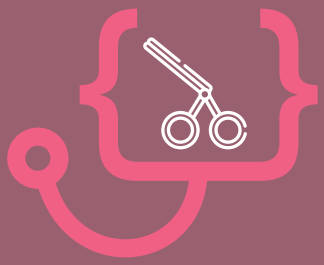

2022 Edition, Vol.III

STANDARD TREATMENT WORKFLOWS

of India

PARTNERS

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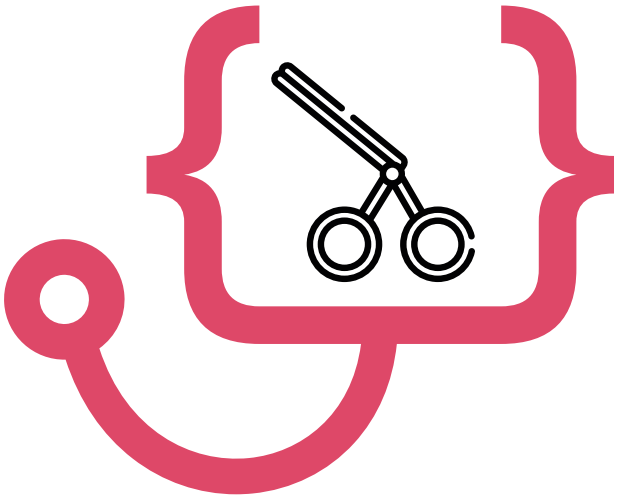

STANDARD TREATMENT WORKFLOWS *of India*

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These STWs have been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (**stw.icmr.org.in**) for more information.

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INTRODUCTION

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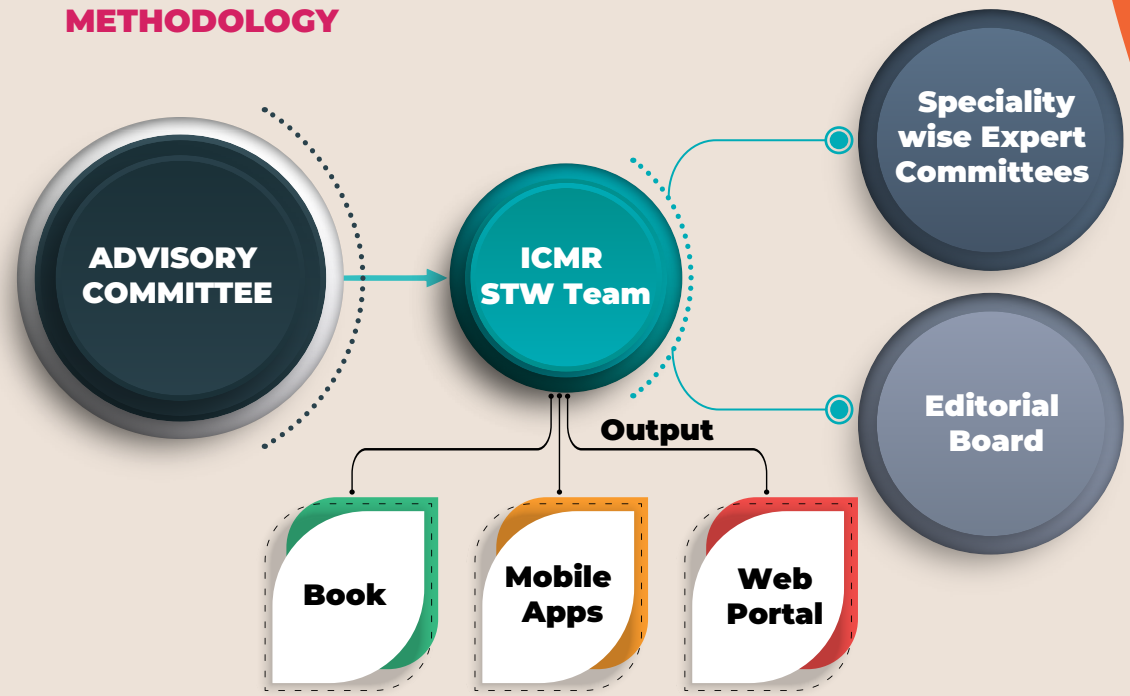
GOAL

To empower the primary, secondary and tertiary health care physicians/surgeons towards achieving the overall goal of Universal Health Coverage with disease management protocols and pre-defined referral mechanisms by decoding complex guidelines.

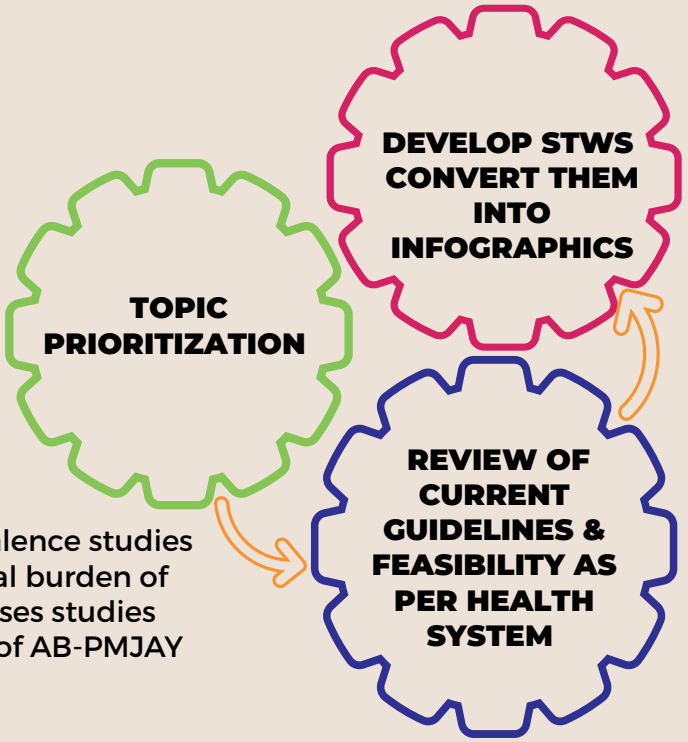
OBJECTIVES

To formulate treatment algorithms for common and serious medical & surgical conditions for both outdoor & indoor patient management at primary, secondary and tertiary levels of India's healthcare system that are scientific, robust and locally contextual.

METHODOLOGY



PROCESS OVERVIEW



- Participation also from Public Health Specialists Search Strategists Graphic Designers

- Prevalence studies
- Global burden of diseases studies
- HBP of AB-PMJAY

- Review by Editorial Board
- Approval by Advisory Committee

DERMATOLOGY

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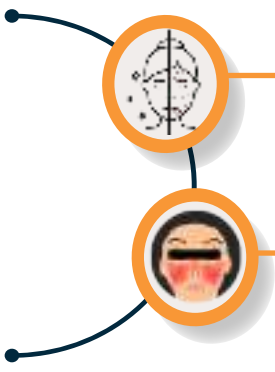
Standard Treatment Workflow (STW)

ACNE AND ROSACEA

ICD-10-L70-71



Acne is a common dermatosis of adolescence and often persists into adulthood

Rosacea often mimics acne but has distinct management issues

WHEN TO SUSPECT?

ACNE

- Comedones (open-blackheads, closed-whiteheads) ± any one or more of the following
  - Papules, pustules
  - Painful nodules containing pus
  - Cysts
  - Scarring
- Sites: Face and/or trunk
- Symptoms: None/pain/pricking

ROSACEA

- Photosensitivity
- Persistent erythema, telangiectasia ± papules and pustules in absence of comedones
- Sites: Convexities of the face (cheeks, forehead, nose, chin)
- Bulbous enlargement of nose- rhinophyma
- Symptoms: Sensitivity to hot and spicy food, and emotional triggers

USEFUL INFORMATION

- Acne and rosacea can co-exist
- It is important to treat acne early so that scarring is minimal
- In Indian scenario, consider 'topical corticosteroid induced acne and rosacea'

ADDITIONAL INFORMATION FOR CLINICAL EVALUATION

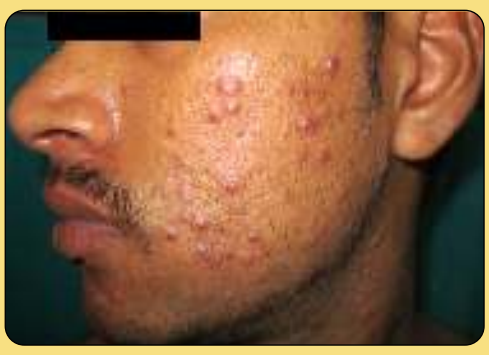
- History of cosmetics/topical steroid use- as such, or in combination with creams/fairness creams
- Age of onset usually around puberty; onset before 8 years of age requires hormonal evaluation
- History of recent drug intake (>fortnight/ month)- Drug induced acne
- History of contact with cutting oils/ halogens (ingestion of iodides/ bromides)
- History of menstrual irregularities (oligomenorrhea), weight gain and hirsutism- look for polycystic ovarian syndrome
- History of premenstrual flare
- Persistence or onset/ recurrence after 25 years of age
- History of dry and gritty eyes- requires ophthalmologic evaluation for ocular rosacea

ACNE VARIANTS AND DIFFERENTIALS

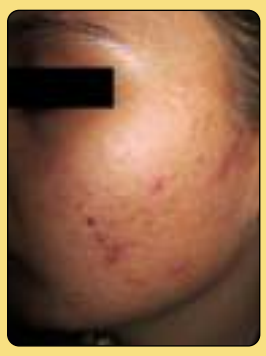
- **Acne conglobata:** Severe scarring on trunk and face with nodular lesions
- **Drug induced acne** (with corticosteroids/ antiepileptic drugs/ antitubercular drugs/ vitamin and protein supplements): Extensive, monomorphic papules and pustules in absence of comedones
- **Topical corticosteroid induced acne:** Hypertrichosis, shiny, thin skin, pigmentary changes with papulo-pustules
- **Hormonal acne:** Adult female with seborrhea, hirsutism, androgenetic alopecia, insulin resistance and PCOS, premenstrual flare, menstrual irregularities and prominent involvement of mandibular area
- **Occupational acne:** Predominantly comedones with history of exposure to cutting oil/ petroleum products
- **Acne excoriee:** Predominantly picked and excoriated lesions with prominent pigmentation
- **Acne fulminans:** Fever and bone pains in association with severe necrotic acne lesions
- **Hidradenitis suppurativa:** Association to consider when axillae/groins/ other flexures are involved with polyporous comedones/ pustules/ nodules/ abscesses/ scarring

DIFFERENTIALS OF ROSACEA

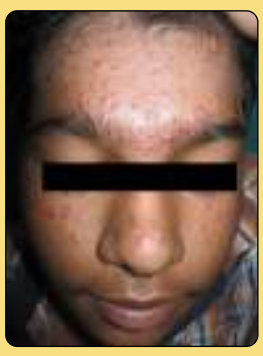
- **Connective tissue diseases like lupus erythematous or dermatomyositis:** Photosensitivity, presence of Raynaud's phenomenon, arthralgia, muscle weakness, dyspnea, dysphagia, oral/ genital ulcers, abdominal pain, frothy urine, seizures, or alopecia
- **Steroid induced rosacea:** Photosensitivity, hypertrichosis, atrophy and pigmentary changes, prior history of topical corticosteroid application for a long time
- **Seborrheic dermatitis:** Predominant involvement of nasolabial folds, eyebrows with erythema and greasy scales
- **Contact dermatitis or atopic dermatitis:** Significant itching, exudation and crusting



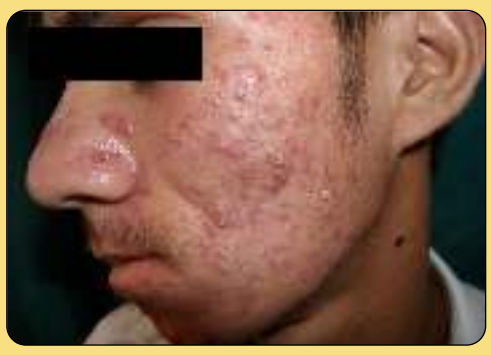
ACNE VULGARIS



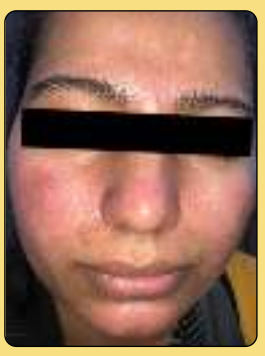
ACNE EXCORIEE



DRUG INDUCED ACNE



NODULOCYSTIC ACNE



ROSACEA

MANAGEMENT

ACNE

- Stop unsupervised topical corticosteroid and cosmetic use on face
- Clean face with soap/ mild cleanser
- Mild-moderate acne: 2.5% Benzoyl peroxide gel or 0.025% Tretinoin cream or 1% Adapalene gel ± Clindamycin gel for local application, at night time
- Moderate acne, not controlled with topicals: Cap Doxycycline 100mg OD for minimum of 4-6 weeks
- Severe nodulocystic acne: Isotretinoin treatment at tertiary level after documentation of normal lipid profile and liver functions
- Acne fulminans: start Prednisolone 0.5-1 mg/kg/day and refer to higher center
- Hormonal acne: Treatment with anti-androgens at tertiary level
- Drug induced acne: Stop offending drugs if feasible; treatment as per severtiy as detailed above

ROSACEA

- Avoid triggers (alcohol, caffeine, spicy food, cosmetics, topical steroids)
- Photoprotection
- **Mild papulopustular rosacea:** topical Azelaic acid (15%) or Metronidazole (1%) or Ivermectin (1%)
- Moderate disease, not controlled with topicals: Cap Doxycycline 100mg OD for minimum of 4-6 weeks
- Severe/phymatous/ ocular rosacea: refer to a specialist for low dose Isotretinoin/interventional treatment

TREAT ACNE EARLY TO PREVENT SCARRING

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Standard Treatment Workflow (STW)

ALOPECIA / HAIR LOSS

ICD-10-L63.9

DEFINITION
Excessive hair shedding and/ or sparsening leading to visible scalp that may be either patchy or diffuse

HISTORY AND EXAMINATION

Elicit history pertaining to
- Duration and age of onset of hair loss
- Whether patchy or diffuse scalp involvement, and if other hair bearing areas are affected
- Relevant medical history pertaining to specific entities mentioned below
- Hair care practices including cosmetic hair procedures

Examine scalp for scarring vs non-scarring by looking for
- Loss of skin markings
- Loss of hair follicle ostia
- Pigmentary changes

GENERAL HAIR CARE PRINCIPLES
- Hair fall of upto 100 per day may be normal and need not cause alarm
- Regular cleaning of scalp and hair with plain shampoo
- Avoid hair oil application and damaging mechanical/ chemical hair care procedures

NON SCARRING ALOPECIA (SMOOTH BALD AREAS WITH SMALL BLACK INTACT HAIR FOLLICLES)

CONGENITAL

Alopecia due to inherited/ congenital disorders with or without easy hair breakage
- Congenital hypotrichosis
- Monilethrix
- Trichorrhexis nodosa
- Loose anagen hair syndrome
- Woolly hair syndrome

Refer to tertiary centre for further evaluation

ACQUIRED

Patchy

Alopecia areata

- Asymptomatic, single/ multiple smooth bald patches; can progress to involve whole scalp (alopecia totalis) or all body hairs (alopecia universalis)
- H/o atopy, examine for nail pitting
- <50% of scalp: Topical 0.05% Betamethasone lotion OD, intralesional Triamcinolone once in 2-4 weeks (5 mg/ml for scalp and 2.5 mg/ml for beard or eyebrows) only for limited involvement, topical Minoxidil 5% OD
- >50% of scalp or involvement of facial and body hairs or margin of occipital area: refer to tertiary centre to be worked up for immunosuppressants such as oral steroids mini pulse, Methotrexate or Cyclosporine

Tinea capitis

- Children with patches of hair loss with scaling and/ or signs of inflammation (erythema, pustulation, boggy swelling). Easy pluckability of hair within the patch
- KOH mount for confirmation, if available
- Oral antifungals- Griseofulvin 10-20 mg/kg, Terbinafine 5 mg/kg; for 6-8 weeks
- Topical antifungal shampoos
- Avoid comb sharing

Trichotillomania

- Children or young adults with bizzare shaped bald patches with broken hair of different length and focal scalp hemorrhages
- Look for other signs of impulsive behaviour
- Counselling and referral to psychiatrist if needed

Diffuse

Telogen effluvium
- History to rule out underlying medical illness, drug intake, menstrual irregularities, hypo/ hyperthyroidism, anemia, physical/ mental stress
- Labs- Hemogram, and if indicated serum ferritin, TSH
- Reassurance and treatment of underlying disorder. If persistent, consider 1 ml of 5% topical Minoxidil once a day

Pattern hair loss

Androgenetic alopecia: males
- Adult males with fronto-temporal hairline thinning or recession, it may progressively involve vertex & parietal areas with usual sparing of occipital area
- Treat with 1mL of topical 5% Minoxidil solution BD
- If effective continue this treatment to maintain hair growth
- Addition of oral Finasteride 1 mg/day may be considered
- Can be referred to trained specialist for hair transplant, if required

Female pattern hair loss
- Hair thinning with widening of partition usually in postmenopausal women
- In premenopausal, look for signs of hyperandrogenism. If present, hormonal workup to rule out PCOS or virilising tumors of ovary/ adrenal glands
- 1 ml of 5% Minoxidil solution OD for local application
- Treatment of underlying condition
- Severe non-responsive: refer to tertiary care
- Oral anti-androgens (Finasteride, Spironolactone, cyproterone acetate with oral contraceptives may be added)

SCARRING ALOPECIA (AREAS WITH FIBROSIS AND DAMAGE TO HAIR FOLLICLES)

All cases of scarring alopecia must be referred to a dermatologist for histological confirmation & further management

Primary

Pustules or boggy lesions

Folliculitis decalvans
Dissecting cellulitis of scalp

Investigations:
- Trichoscopy, scalp biopsy for histopathology

Treatment:
- Long term oral antibiotics: Doxycycline/ Clindamycin for 10-12 weeks
- Consider low dose oral steroids
- Isotretinoin

Pigmentary changes

Lichen plano pilaris
Violaceous plaques and follicular plugs. Examine for lichen planus of other sites

Investigations:
- Trichoscopy, scalp biopsy for histopathology

Treatment:
- Oral steroid mini pulse +/- Methotrexate/ Azathioprine/ Cyclosporine for halting active progression
- Strict laboratory monitoring for any adverse drug events
- For burnt out disease- wigs and camouflage

Discoid lupus erythematosus
Erythematous to depigmented plaques with atrophy, scaling and follicular plugs

Investigations:
- Trichoscopy, scalp biopsy for histopathology, direct immunofluorescence, workup to rule out SLE

Treatment:
- Photoprotection
- Topical steroids
- Hydroxychloroquine 5mg/kg/day after baseline ocular examination; usually required for 6-12 months

Secondary

Due to trauma/ burns/ dermatoses like morphea, pemphigus, neoplasms affecting the scalp

Investigation and treatment of underlying disorder

☛ HIGH REGROWTH POTENTIAL WITH NON-SCARRING ALOPECIA, GUARDED REGROWTH POTENTIAL WITH SCARRING ALOPECIA

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Standard Treatment Workflow (STW)

BACTERIAL SKIN INFECTIONS

ICD-10-L01, L73.9, L08, L02, L03, A46, L00

GENERAL PRINCIPLES OF MANAGEMENT

- Skin hygiene, advise on handwashing/ local hygiene, avoidance of oil application, adequate nutrition
- For recurrent/ severe lesions: evaluate for nasal carriage, diabetes, underlying skin conditions (scabies, atopic dermatitis)
- In immunocompromised/ diabetics: consider the need for gram negative coverage

1. IMPETIGO

CLINICAL FEATURES

Wet yellow brown crusts overlying red inflamed skin

- **Types** Non bullous (NBI; commoner), bullous (BI)
- **Affected age group** usually children
- **Common sites** Face (perinasal, perioral) > extremities; extensive with scabies/ atopic eczema

MANAGEMENT

- Topical antibiotics for 5 days
- Oral antibiotics for extensive involvement or numerous lesions, lymphadenopathy or in outbreaks to prevent transmission

2. ECTHYMA

CLINICAL FEATURES

- Black thick crust (eschar) with underlying ulcer & surrounding redness & edema

MANAGEMENT

- Treat with oral antibiotics for 7 days
- Gentle crust removal may be attempted after soakage with sterile saline; topical antibiotics over the exposed ulcer

3. FOLLICULITIS

CLINICAL FEATURES

Hair follicle centred pustule/ papule
Rule out non bacterial causes: oils, chemicals, waxing, epilation, occlusive dressing
RECURRENT FOLLICULITIS Recurrent infection or outbreak in multiple members of family may indicate nasal *Staphylococcus aureus* carriage or human-pet transmission

MANAGEMENT

- Topical antibiotics for 5 days
- Oral antibiotics for multiple lesions
- Anti-inflammatory: Paracetamol 500mg/ Ibuprofen 400mg SOS for pain relief

4. FURUNCLE

CLINICAL FEATURES Painful follicle centric nodule/ pus point/ impending bulla/ ulcer with marked surrounding erythema, edema and induration

5. CARBUNCLE

CLINICAL FEATURES Confluence of multiple closely spaced furuncles + pus draining from multiple follicular orifices
Commonly nape of neck> breasts, buttocks in uncontrolled diabetes

6. CUTANEOUS ABSCESS

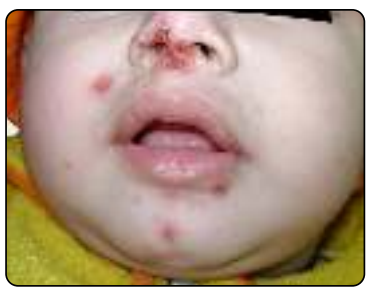
CLINICAL FEATURES Painful, warm, red fluctuant skin swelling

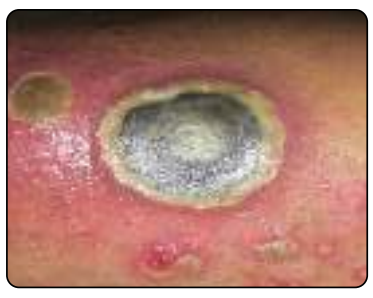
MANAGEMENT

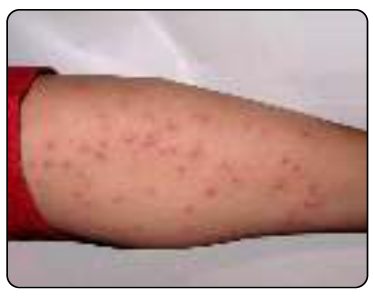
- **SMALL** → Oral antibiotics + Topical antibiotics: to reduce contamination of surrounding skin
- **LARGE** → **INCISION AND DRAINAGE**
  - Incision and drainage/ debridement
  - Ancillary antibiotics if systemic inflammatory signs, associated septic phlebitis, multiple/ large abscesses, prominent cellulitis & immunocompromised state

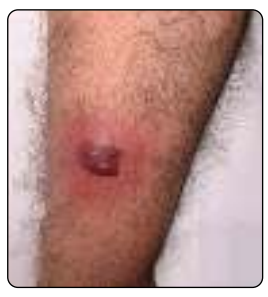
HOSPITALIZATION AND IV TREATMENT FOR SEVERELY ILL PATIENTS

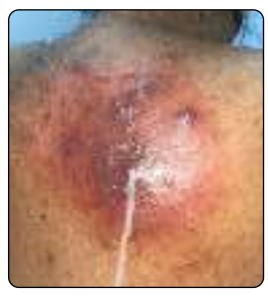
- Inj Ceftriaxone 2g BD OR Inj Amoxicillin-clavulanate 1.2gm TDS
- Alternatively - Inj Clindamycin 600-900mg TDS

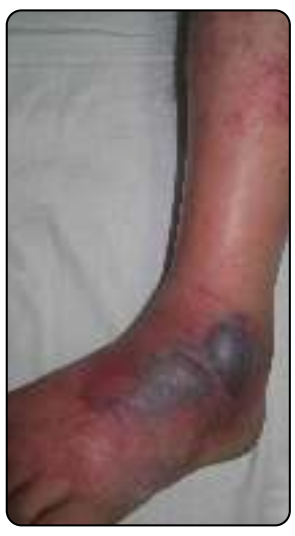

IMPETIGO


ECTHYMA


FOLLICULITIS


FURUNCLE


CARBUNCLE


CELLULITIS WITH BULLAE

7. CELLULITIS

CLINICAL FEATURES Acute spreading infection of skin involving subcutaneous tissue; Painful, red, tender, diffuse swelling mostly involving the limbs

8. ERYSIPELAS

CLINICAL FEATURES A more superficial, bright red, edematous, painful area with a clear demarcated edge; common sites: lower extremities>face. Often associated with lymphangitis and lymphadenopathy; broken skin/ portal of entry may be visualised

CATEGORIZE DISEASE SEVERITY

MANAGEMENT

MILD

- Typical cellulitis/ erysipelas with no focus of purulence

MANAGEMENT

- Outpatient treatment with oral antibiotics
- Elevation of affected area (to allow for dependent drainage); treatment of predisposing factors
- Anti-inflammatory (Ibuprofen 400mg BD, Indomethacin 75mg BD)

MODERATE

- Typical cellulitis/ erysipelas with systemic signs of infection

MANAGEMENT

Hospitalization and parenteral antibiotics:

- Inj Ceftriaxone 2g BD OR Inj Amoxicillin-clavulanate 1.2gm TDS
- Alternatively (allergic to penicillins) Inj Clindamycin 600-900mg IV TDS

SEVERE

With poor response to oral antibiotics, immunocompromised, signs of deeper infection like bullae, skin sloughing or systemic signs of infection like hypotension, or with organ dysfunction

MANAGEMENT

Empiric broad spectrum IV antibiotic coverage

- Vancomycin + Piperacillin/ tazobactum
- Surgical debridement
- Sensitivity profile based modification of antibiotics

INVESTIGATIONS

1. Swabs for gram staining and pus culture are desirable
2. Blood cultures and biopsies are not routinely recommended, but useful with co-morbid conditions (malignancy on chemotherapy, immunocompromised states, animal bites etc.)

COMPLICATIONS

Subcutaneous abscesses, blistering (often haemorrhagic), ulceration, tissue necrosis, myositis, septicemia

9. STAPHYLOCOCCAL SCALDED SKIN SYNDROME

- Superficial peeling of skin due to toxin producing strains of staphylococcus
- Starts as tender and warm erythema and progresses to localised or generalised exfoliation with fever, malaise +/- dehydration and electrolyte disturbances
- Follows a local staphylococcal infection of either skin, throat, nose, umbilicus, or gut
- Bacteria cannot be demonstrated from blisters (cultures from original site may be positive)
- Treatment: preferably in-patient
- Mild cases: oral anti-staphylococcal antibiotics; severe cases: IV antibiotic
- Consider methicillin resistant *Staphylococcus aureus* (MRSA) coverage
- Usually remits within a week in children, high mortality in adults

RED FLAGS

- Temperature >100.4 ˚F, WBC>12,000 or < 4000/µL, heart rate > 90 bpm, or respiratory rate > 24/min may indicate sepsis
- Severe pain followed by deceptive absence may indicate necrotising fasciitis
- Dark discoloration of overlying skin

PHARMACOTHERAPY

ANTIBIOTICS FOR SKIN AND SOFT TISSUE INFECTIONS

PREFER β-LACTAMS

- Amoxycillin 500mg TDS (25-50 mg/kg/day)
- Cloxacillin 500mg QID (50mg/kg/day)
- Cephalexin 250-500mg QID (25–50 mg/kg/day)
- Amoxicillin clavulanate combination: 625mg TDS

IF ALLERGIC TO PENICILLINS

- Erythromycin 500mg QID (40 mg/kg/day)
- Clindamycin: 300-600mg BD/TID (20mg/kg/day)

FOR NASAL CARRIERS

2% Mupirocin ointment for 5 days a month

TOPICAL ANTIBIOTICS

- Mupirocin cream 2%
- Fusidic acid cream 2%
- Framycetin cream 1%

IN ALL PATIENTS SUSPECT THE NEED FOR MRSA COVERAGE IF:

- Poor immune status
- Severe systemic signs
- MRSA infection elsewhere
- If no improvement in 48-72 hours
- Penetrating trauma

ORAL ANTIBIOTICS FOR SUSPECTED OR CONFIRMED MRSA INFECTION

- Cotrimoxazole 2 DS tablets BD
- Doxycycline 100 mg BD
- Minocycine 200 mg BD
- Linezolid 600 mg BD

IV ANTIBIOTICS FOR MRSA

- Vancomycin: 15 mg/kg BD
- Linezolid: 600 mg BD
- Clindamycin: 600-900 mg TDS

ANTIBIOTIC SUSCEPTIBILITY PATTERNS MAY VARY WITH REGION AND TIME

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Standard Treatment Workflow (STW)

CUTANEOUS ADVERSE DRUG REACTIONS- PART A

ICD-10-L27.0

Cutaneous adverse drug reactions (cADR) are undesirable clinical manifestations to a drug, which include predictable or unanticipated side effects, with or without systemic involvement

COMMON TYPES OF cADR

NON- SEVERE cADR

- Fixed drug eruption (FDE)
- Maculopapular/ Exanthematous reactions

SEVERE cADR

- Drug induced hypersensitivity syndrome/ DRESS*
- Acute generalized exanthematous pustulosis
- Angioedema/ Anaphylaxis*
- Erythema multiforme/ Stevens Johnson syndrome/ Toxic epidermal necrolysis*

***Refer to separate STW on Urticaria/ Angioedema, and cADR Part-B for DRESS/ Stevens Johnson syndrome/ Toxic epidermal necrolysis**

GENERAL PRINCIPLES

- **Common presentation**: Sudden onset of an itchy rash that is symmetrically distributed and spreads rapidly. May have had a previous similar allergic reaction.
- **Withdraw:** The offending drug(s) immediately, except life saving drugs (if they are not the suspected drugs)
- Take necessary measures to **prevent similar events** (record on patient's medical chart, educate, provide allergy card etc.)
- **Recognize danger signs**
  - » Mucosal lesions, purpuric lesions, skin tenderness, bullous lesions (peeling/ sloughing of skin)
  - » Systemic symptoms: High grade fever, jaundice, decreased urine output
- **Action required:** Prompt and urgent care at a specialised centre. Apart from maintenance of vitals, withdrawal of all drugs, initiation of oral or intravenous corticosteroids, care of the eye, evaluation of secondary infection/ sepsis are important

HISTORY ELICITATION

- History of prior adverse drug reaction
- Patients on polypharmacy: list all recently introduced drugs and/ or dosage increments. However, all drugs should be kept in suspect list
- Concomitant viral infection or illnesses affecting drug metabolism or excretion (eg. chronic kidney disease)

TIMELINES FOR DRUG REACTIONS AND SOME TYPICAL EXAMPLES

- **5-15 minutes:** Anaphylaxis, urticaria, angioedema
- **Few hours:** Reactivation of fixed drug eruption
- **Few hours- 2 weeks:** Maculopapular exanthem, erythema multiforme, Stevens –Johnson syndrome, toxic epidermal necrolysis, first episode of FDE
- **4- 12 weeks:** DRESS syndrome, Dapsone syndrome, anticonvulsant induced hypersensitivity syndrome

1) FDE

- **Distinctive drug eruption:** usually recur at the same site on drug re-exposure
- **Acute FDE:** dusky red-violaceous plaques with or without vesiculation or bullae
- **Common sites:** lip, genitalia, proximal extremities, low back, sacrum
- **Local symptoms:** pruritus, burning, and pain; solitary or numerous (latter is difficult to differentiate from toxic epidermal necrolysis). Resolve with persistent hyperpigmentation
- **Clinical variants:** bullous, generalised, pure mucosal
- **Common drugs that cause FDE:** Sulfonamides, tetracyclines, quinolones, NSAIDS, dapsone, antimalarials, barbiturates, nitroimidazoles

REFER TO HIGHER CENTER IF

- There are atypical symptoms
- Uncertain diagnosis
- Severe reaction (multiple lesions, bullae, severe mucosal lesions, systemic symptoms)

MANAGEMENT

PRIMARY HEALTH CENTRE

- Withdraw the drug
- General management: Bullous/ moist/ oozy lesions- normal saline compresses
- Topical steroid: Betamethasone valerate cream BD for cutaneous lesions
- Antihistamines –Tab. Pheniramine maleate 25 mg BD/TID for itching
- Review patient in 1 week

SECONDARY LEVEL CARE

- Continue treatment as described at primary care level
- If severe: add short course of oral steroids: Prednisolone 0.5 mg-1 mg/kg for 3-5 days

TERTIARY LEVEL

- Admit the patient if the episode is generalized and severe
- Histopathology in doubtful cases
- If the oral mucositis is severe, consider parenteral steroids
- Provocation tests may be done after resolution of symptoms (usually after 1-6 months) by an oral challenge with each suspected individual drug consecutively

2) MACULOPAPULAR/EXANTHEMATOUS REACTIONS

- Abrupt onset, erythematous maculopapular eruption
- Typically starts on the trunk, spreads symmetrically to extremities. Dependent areas may have purpuric lesions
- Usually accompanied by mild systemic symptoms- pruritus, low grade fever, mild eosinophilia
- All drugs taken in the last 4 weeks are suspects. May manifest within 48 hours if the patient has taken the drug previously
- Commonly observed with co-trimoxazole, cephalosporins, anti-tubercular drugs, aminopenicillins, quinolones, dapsone, NSAIDS, anticonvulsants, nevirapine, abacavir, allopurinol, leflunomide
- Differential diagnosis: Viral exanthem, Rickettsial rash, HIV, Kawasaki disease (in children)
- Fever and prodromal symptoms (coryza, malaise) occur before the development of rash in most viral exanthems and the drug history is usually negative prior to it

RED FLAG SIGNS

- Mucosal involvement
- Purpuric lesions
- Bullous lesions
- Skin tenderness
- Facial/ acral edema
- Erythroderma
- Systemic symptoms - High grade fever, hepatitis, renal involvement, significant eosinophilia

MANAGEMENT

PRIMARY CARE

- Withdraw the suspect drug(s)
- Pheniramine maleate 25 mg TID
- Calamine lotion
- Refer to higher center if symptoms persist or red flag signs present

SECONDARY CARE

- Confirm the diagnosis by history and clinical findings
- Admit if red flag signs are present
- Laboratory tests: CBC (Eosinophilia supports the diagnosis), LFT, serum creatinine, urine M/E
- Treatment: in severe cases, prednisolone 0.5-1 mg/ kg/ day x 5-7 days (after ruling out infection)

TERTIARY CARE

- Admit if red flag signs are present
- Confirm diagnosis of drug rash
- Additional lab tests if required: ANA, HIV, skin biopsy
- Consider DRESS if rash is progressing or significant organ involvement is evident

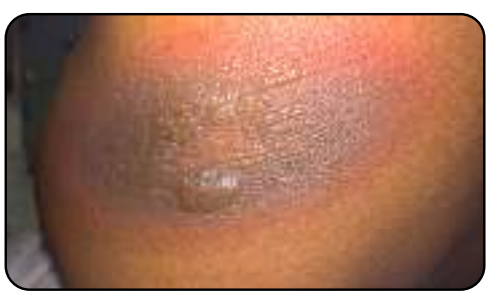
DRUG PROVOCATION TEST

In the absence of any reliable *in vitro* test in clinical setting, oral drug challenge is the only way to detect the responsible drug

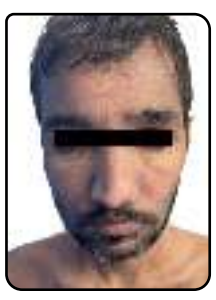
Usually undertaken when drug avoidance is impractical, especially in case of polypharmacy or life saving medicines (e.g. antituberculous therapy)

- Take a written consent prior to challenge
- Contraindicated in active illness or pregnancy
- Assess the risk benefit ratio
- Caution: patients on antihistamines, oral steroids and tricyclic antidepressants may have a modified response to the challenge
- A negative test only indicates that the patient is not allergic to the drug at the time of challenge
- The dose of drug for challenge depends on the severity of the previous reaction and the pharmacokinetic profile
- Drug provocation should always be done
  - After admission/ under observation except in cases with FDE
  - Usually in the daytime so that the faintest erythema is appreciated
  - It should be treated immediately and aggressively with an appropriate dose of systemic corticosteroid which may be required for only 1-2 days
  - Drug provocation in cases with DRESS has to be avoided or if provoked, a prolonged retreatment is required
  - In case of SJS-TEN drug provocation should be done only if the drug cannot be avoided. Provocation is preferred with a chemically unrelated molecule
- Intradermal tests can be done in IgE mediated reactions
- Patch test has a low sensitivty and should not be relied upon in severe cADR

FDE



BULLOUS FDE



MACULOPAPULAR RASH

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Standard Treatment Workflow (STW)

CUTANEOUS ADVERSE DRUG REACTIONS- PART B

ICD-10-L27.0

Cutaneous adverse drug reactions (cADR) are undesirable clinical manifestations to a drug, which include predictable or unanticipated side effects, with or without systemic involvement.

COMMON TYPES OF cADR

NON- SEVERE cADR

- Fixed drug eruption (FDE)*
- Maculopapular/ Exanthematous reactions*

SEVERE cADR

- Drug induced hypersensitivity syndrome/ DRESS
- Acute generalized exanthematous pustulosis
- Angioedema/ Anaphylaxis*
- Erythema multiforme/ Stevens Johnson syndrome/ Toxic epidermal necrolysis

***Refer to separate STW on Urticaria/ Angioedema, and cADR Part-A for FDE/ Maculopapular/ Exanthematous reactions**

DRUG RASH WITH EOSINOPHILIA AND SYSTEMIC SYMPTOMS (DRESS) SYNDROME

- Potentially life threatening systemic adverse reaction
- Onset 2-6 weeks after start of drug intake (up to 12 weeks)
- The rash may continue to progress weeks to months after discontinuation of the drug
- Commonly observed with anticonvulsants, dapsone, allopurinol, abacavir, leflunomide, minocycline

When to suspect DRESS syndrome

- Exposure to a high risk drug
- Clinical presentation: fever (>38°C-40°C), rash, leukocytosis with eosinophilia, lymphadenopathy, hepato-renal dysfunction
- Features of the rash: involves >50% body surface area, facial edema, desquamation or dusky erythema
- Occasionally pustules and targetoid lesions may be seen

MANAGEMENT

PRIMARY CARE

- Withdraw drugs
- Assess vitals, stabilise the patient and refer to higher center
- Symptomatic relief: Antihistamines, emollients
- Do not add any unnecessary new medications

SECONDARY CARE

- Same as primary care
- CBC, absolute eosinophil count (optional), LFT, renal function- monitored at least weekly
- CXR, ECG and ECHO to rule out myocarditis
- **Treatment**
- If no evidence of major organ involvement
- First line- Systemic steroids- Prednisolone 0.5-2 mg/kg, slow taper after symptoms and signs resolve (over months if needed)
- Antihistamines-Pheniramine 25 mg TID, bland emollients like liquid paraffin
- If there is severe organ involvement- liver, renal or cardiac refer to tertiary center for multidisciplinary intensive care

TERTIARY CARE

- Same as primary/ secondary care
- Second line - Cyclosporine (if the renal function is normal)
- Management will require a multidisciplinary team approach, depending on the organ(s) involved
- In the presence of severe liver failure, hemophagocytic syndrome, gastrointestinal bleeding, multiorgan failure, the patient may require intensive care treatment

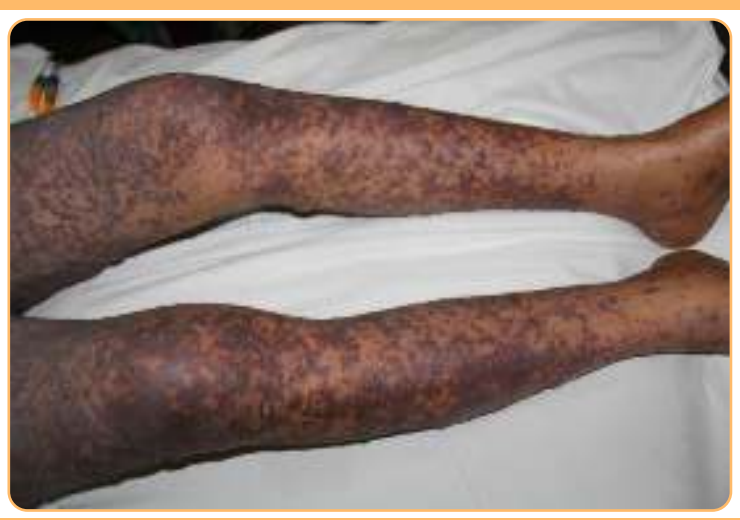
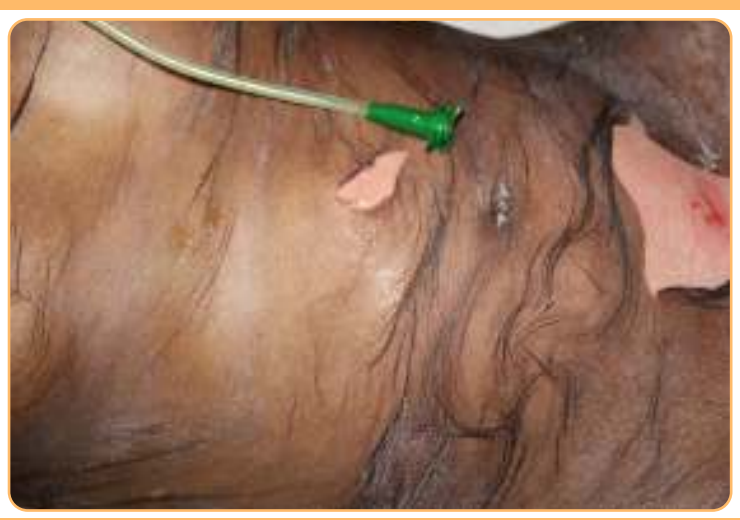
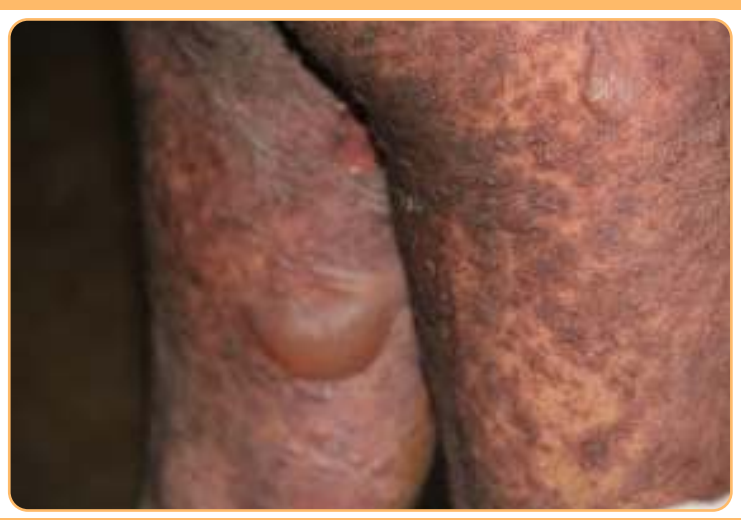
STEVENS JOHNSON SYNDROME (SJS) AND TOXIC EPIDERMAL NECROLYSIS (TEN)

- Acute, severe mucocutaneous reactions associated with epidermal detachment and/ or tenderness, and widespread erythematous lesions with central dusky erythema or vesiculation often associated with high grade fever
- Usually observed with aromatic anticonvulsants, allopurinol, nevirapine, abacavir, NSAIDs, co-trimoxazole
- The classification of SJS, TEN is based on the extent of detachment
- D/d-Staphylococcal scalded skin syndrome, pemphigus

TYPE	DETACHMENT (% BSA)	WIDESPREAD ATYPICAL TARGETS *OR ERYTHEMATOUS MACULES
SJS	<10%	Present
SJS-TEN	10-30%	Present
TEN	≥30%	Present
TEN without SPOTS	≥10%	Absent

*Atypical targets (Red macules with purpuric vesiculations/ crusted centers)

TOXIC EPIDERMAL NECROLYSIS

PROGNOSIS

SCORTEN PROGNOSTIC FACTORS	POINTS
Age > 40 years	1
Tachycardia > 120 bpm	1
Neoplasia	1
Initial detachment > 10%	1
Serum urea > 60 mg/dL	1
Serum bicarbonate < 20mmol/L	1
Blood glucose > 252mg/ dL	1

Assess prognosis with a SCORTEN score done within 24 hours of presentation and repeated 3 days later

SCORTEN SCORE	ESTIMATED MORTALITY %
0-1	3
2	12
3	35
4	58
≥ 5	> 90

INVESTIGATIONS

- Chest X- ray
- ECG
- **Laboratory tests-** CBC, LFT, KFT, electrolytes, magnesium, phosphate, lactate
- Blood gas analysis
- **Microbiology-** Pus culture from infected areas and blood culture
- **Skin biopsy-** Not usually required unless the diagnosis is in doubt
- **Optional-** In TEN, biopsy and direct immunofluorescence is useful to rule out SLE and pemphigus

MANAGEMENT

PRIMARY CARE

- See primary care for drug rash with eosinophilia and systemic symptoms (DRESS)

SECONDARY CARE

- Assess vitals, stabilise the patient, nutrition and fluid replacement as appropriate
- Local care for skin and mucosae
- Skin care- dilute potassium permanganate baths/ saline compresses/ Chlorhexidine baths
  - Detached epidermis can be left in situ and covered with non-adherent dressing (sterile vaseline gauze)
  - Topical antibiotics (Mupirocin or Fucidin) on sloughed off areas
  - Oral care- Rinse mouth with Chlorhexidine 2-3 times, soft paraffin on lips as needed, steroid mouth washes
  - Eye care- refer to ophthalmologist
- Antibiotics-broad spectrum antibiotics (in case of sepsis or secondary infection) to cover staph, strep and pseudomonas. Change according to culture results and avoid suspected drug class
- Adjuvant systemic therapy (ideally within the first 24-72 hours of onset)
  - The role of systemic steroids is limited to early phase of SJS/TEN. High doses for longer periods can increase the risk of sepsis and metabolic complications. However judicious use of Prednisolone 1-2 mg/kg or equivalent dose of intravenous Dexamethasone for 3-7 days may be of benefit
  - Cyclosporine in a dose of 3-5 mg/kg for a period of 10-14 days (with monitoring)
- If skin detachment >10% refer to a center with an ICU familiar with management of skin failure
- If < 10% follow the treatment as described

TERTIARY CARE

- Admit in specialized units within dermatology wards if vitals are stable and follow secondary care treatment
- Barrier nursing
- If patient has SIRS/ sepsis or in shock, admit to ICU
- Long term follow up will be required to address complications: ophthalmic, skin and respiratory tract involvement

☛ ANY DRUG BELONGING TO ANY MEDICINAL SYSTEM CAN CAUSE cADR

July 2022

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Standard Treatment Workflow (STW)

DERMATOPHYTOSES

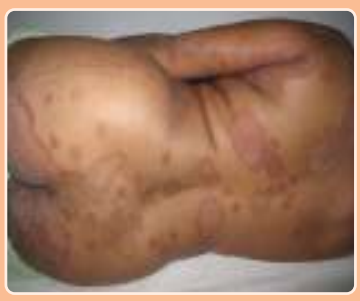
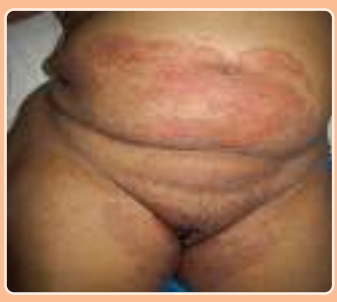
ICD-10-B35.9

DEFINITION
- Superficial fungal infection caused by dermatophytes
- Affects keratin bearing structures i.e the skin, nails and hair

ADVISE ALL PATIENTS TO
- Take treatment regularly as advised and never stop without consultation after obtaining some relief to prevent relapse
- Do not self medicate. This can make the infection difficult to treat
- Do not ever use any steroid containing OTC creams from chemists/ on own

TINEA CORPORIS/CRURIS

EXAMINATION
- Itchy scaly lesion on the skin
- Typically annular (ring like) lesions with variable scaling (flaking) and erythema (redness)
- Always examine: groins, buttocks, nails, palms and soles
- Ask for lesions in other family members

DIAGNOSIS
- For doubtful cases: KOH microscopy of scales shows the typical septate hyphae
- Culture and other advanced methods are not required in routine practice

GENERAL MEASURES

ADVISE THE FOLLOWING DOS AND DONTS TO THE PATIENT

DOS	DON'TS
Take daily bath with regular bathing soap and normal temperature tap water	Do not share towels and clothes
Dry skin well after bath	Do not re-wear clothes before washing
Wash clothes separately in hot water and dry inside out in the sun	

TREATMENT

TOPICAL ANTIFUNGAL
- For limited involvement in cases of Tinea corporis and cruris
- USE
  - Clotrimazole 1%/2% cream BD
  - Miconazole 2% cream BD
  - Terbinafine 1% cream BD
  - Ketoconazole 2% cream BD
- For extensive disease,it is not feasible to use antifungal creams alone; advise oral antifungals

OR

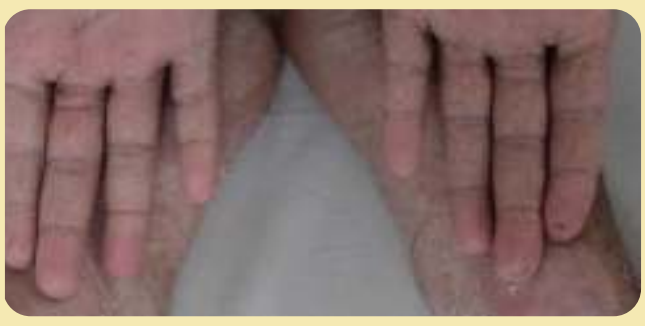
Advise anti fungal creams over most bothersome lesions only (in addition to systemic drugs)

TREATMENT IN CHILDREN
- Always look for infection in the parents/caregivers
- Prefer topical antifungals for younger children
- Oral antifungals (weight based dosing)
  - Terbinafine : 3-6mg/kg/day or
    <20kg : 62.5mg
    20-40kg : 125mg
    >40kg : 250mg
  - Fluconazole : 6mg/kg/day
  - Griseofulvin : 10-20mg/kg/day

REFER TO A SPECIALIST/ TERTIARY CENTRE IF
- Very extensive disease
- No/ minimal improvement with regular treatment after 4 weeks
- Cure not achieved despite prolonged treatment and good compliance
- Recurrent infection
- Co-morbid conditions present: Pregnancy/lactation/hepatic disease/renal disease or cardiac disease
- History of prolonged topical/ oral/parenteral/ steroid use
- **Remember:** The lesions are often modified by self application of topical steroids/ combination products
- The "ring" may be incomplete
- Scaling may be minimal
- Pigmentation may be prominent
- Do not use any steroid containing cream

TINEA PEDIS/ MANUUM

EXAMINATION
- Dermatophytic infection of palms (Tinea manuum)and soles (Tinea pedis)
- Generally unilateral involvement; toe webs commonly involved
- Scaling may present along the creases of palms/soles only or may be diffuse; occasionally dried vesicles are seen
- A scaly (+/- erythema) margin may be seen at the level of wrist (T. manuum) and at insteps or out steps of feet (T.pedis)
- Coexistent involvement of nails is common



GENERAL MEASURES
- Prolonged treatment is required;
- Treatment with adequate dosage for recommended duration should be adhered to
- **Advise patient to:**
  - Avoid walking barefoot in public places esp swimming pools/ community bathing areas
  - Wash feet with bathing soap and normal temperature tap water
  - Wipe and dry well with a towel
  - Dry toe clefts before wearing shoes/socks
  - Wear cotton socks
  - Wash worn socks separately in hot water

TREATMENT

SYSTEMIC TREATMENT
- ALWAYS TREAT TILL ALL LESIONS HAVE COMPLETELY RESOLVED
- This may take between 3-8 weeks or more depending on the extent of infection and previous treatments used; longer when palms/soles also involved or history of prolonged steroid use
- Follow up regularly every 2 weekly
- Oral antifungals for adults:
  - Tab Terbinafine 250mg BD
  - Tab Griseofulvin 500mg BD
  - Tab Fluconazole 50-150 mg OD
- **For relief of pruritus:**
  Tab Cetirizine 10mg HS or Tab CPM 4mg TDS

TREATMENT IN PREGNANCY
- Preferably use only topical antifungals
- Maximum safety data for use of
  - Miconazole cream
  - Clotrimazole cream
- Limited safety data in humans to recommend use of any systemic antifungal during pregnancy esp first trimester
- If required, fluconazole may be preferred

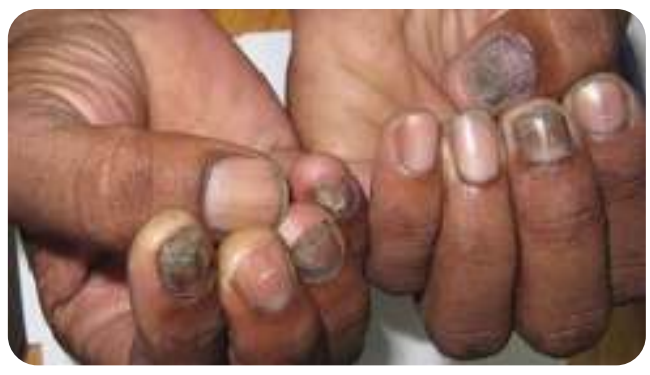
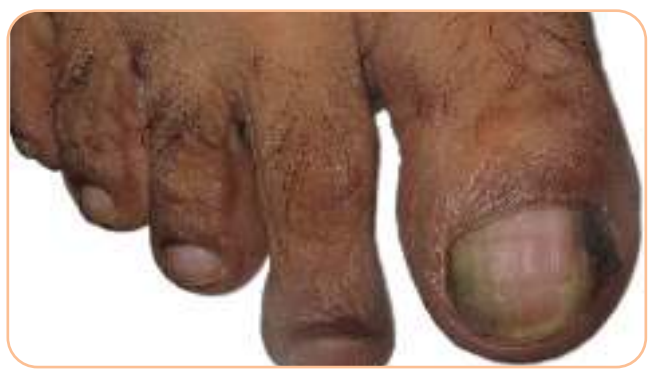
MANAGEMENT AT TERTIARY CARE
- Individualise treatment
- Treat till complete clinical and mycological cure (KOH negativity)
- Send for culture, speciation and antifungal susceptibility testing, if available

TOPICAL TREATMENT (OVER LIMITED AREAS ONLY)
- In addition to previously mentioned:
- Luliconazole cream topically OD
- Sertaconazole cream topically BD

SYSTEMIC TREATMENT
- Cap Itraconazole 100-200 mg/day
- Tab Terbinafine 250mg BD

ONYCHOMYCOSIS

EXAMINATION
- Discoloration of nail with build up of keratinous debris under the nail plate
- Generally affects isolated nails asymmetrically
- The whole nail may crumble in advanced cases
- Look for simultaneous involvement of palms/soles
- Ask for diabetes; signs of peripheral vascular disease

GENERAL MEASURES
- **ADVISE PATIENTS TO:**
  - Keep affected nails trimmed as they are fragile and trauma prone
  - Keep separate nail clippers
  - Avoid any cosmetic nail procedures, pedicure/manicure
- Inform the patient that it might take several months after treatment completion for a completely normal looking nail to appear and in severe cases, a cosmetically acceptable result may not be achieved

It is important to treat the nail infection as it is a potential focus for spread of the fungus to other body sites

TREATMENT

TOPICALS
- Limited disease with less than 50% nail surface involvement/ not going back till the lunula

OR
- Patients with contraindication for oral antifungals(eg. renal disease etc
- Amorolfine 5% nail lacquer application once a week or Ciclopirox 8% nail lacquer thrice a week

SYSTEMIC ANTIFUNGALS
- Tab Terbinafine 250mg BD (6 weeks for fingernails and 12 weeks for toenails)
- Cap Itraconazole 100 mg BD for 12 weeks

OR

200mg BD/day for seven days a month (2 such pulses for fingernails and 3 for toe nails)

ENSURE TREATMENT FOR ADEQUATE DURATION TO PREVENT RELAPSE

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Standard Treatment Workflow (STW)

ECZEMA/ DERMATITIS

ICD-10-L20

ACUTE
Red, edematous plaques with small, grouped vesicles

SUBACUTE
Erythematous plaques with scaling or crusting

CHRONIC
Lesions may have scaling or lichenification

MAJOR FORMS OF ECZEMA

EXOGENOUS ECZEMAS
Those with a known exogenous trigger, management of exogenous eczemas is to remove the cause if possible, along with pharmacological intervention

- Allergic contact eczema
- Dermatophytide
- Eczematous polymorphic light eruption
- Infective eczema
- Irritant contact eczema
- Photoallergic contact eczema
- Post-traumatic eczema

ENDOGENOUS ECZEMAS
Without a known exogenous trigger, more often requires pharmacological intervention

- Asteatotic eczema
- Atopic eczema
- Chronic superficial scaly eczema
- Eyelid eczema
- Hand eczema
- Juvenile plantar dermatosis
- Nummular eczema
- Pityriasis alba
- Eczema associated with systemic disease
- Seborrhoeic eczema
- Venous eczema

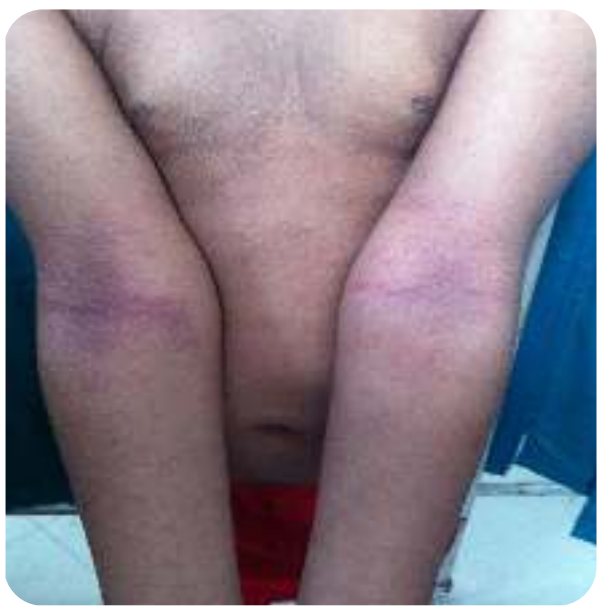
HISTORY

- Associated history of atopy, allergic rhinitis or asthma in patient and family members
- Age of onset is usually early(less than 5 years) in atopic dermatitis
- Site of onset- predominant flexural involvement in atopic dermatitis
- Possible allergens implicated
- High risk occupations with increased exposure to allergens or irritants such as agricultural work, masons, hair-dressers etc.
- Associated photosensitivity, especially in parthenium dermatitis
- Change in severity with season; summer exacerbation in parthenium dermatitis
- Winter exacerbation in atopic dermatitis

EXAMINATION

ATOPIC DERMATITIS

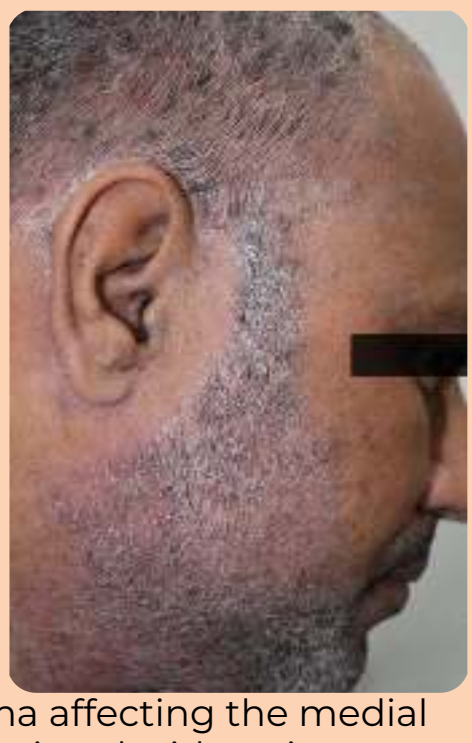
- **Infantile:** Most commonly on the face, followed by involvement of extensors of the knees and elbows
- **Childhood/ Adult phase:** Pattern changes to flexural involvement (cubital and popliteal fossa)



ATOPIC DERMATITIS

ENDOGENOUS ECZEMA

- **Nummular dermatitis/eczematous:** Circular or oval, commonly affecting neck, hands and feet
- **Seborrhoeic dermatitis:** Involvement of the scalp and other seborrhoeic areas and skin folds; ranging from mild flaking to thicker, yellow, greasy scales and crusts



- **Venous eczema:** Eczema affecting the medial aspect of ankles associated with varicose veins/ venous incompetence

CONTACT DERMATITIS

- It can be irritant or allergic
- Eczema pattern corresponds to the pattern of allergen/ irritant exposure
- It can be localized or widespread

EXAMPLE: Parthenium dermatitis contact dermatitis to nickel contact dermatitis to hair dye

DIAGNOSIS

- Most cases of eczema can be diagnosed clinically
- Secondary infection is common, may cause eczema to flare and can be confirmed by taking swabs for culture and sensitivity
- Patch tests are designed to detect allergens in cases of suspected allergic contact dermatitis
- Potassium hydroxide (KOH) preparation or biopsy when dermatophyte infection or other diagnoses are suspected

DIFFERENTIAL DIAGNOSIS

- Tinea corporis
- Psoriasis
- Cutaneous t-cell lymphoma (CTCL)

TREATMENT

GENERAL PRINCIPLES

- Avoidance of allergens and irritant materials
- Daily bath with mild soap, keep nails short, avoid scratching
- Moisturizer are cornerstone in the management of eczema; to be applied immediately after bathing while the skin is still damp and apply multiple times during the day
- Antihistamines for (eg. levocetirizine) for control of pruritus
- Topical corticosteroids (TCS) mild – Over face/ flexures genitals. Mid potent TCS over palms, soles and lichenified lesions
- Topical calcineurin inhibitors (TCIs)- Face/ flexures genitals and/or as maintenance treatment
- If secondary infection (pain, pus discharge, yellow crust)- Treat with topical/ oral antibiotic as needed

SPECIFIC MANAGEMENT

Primary/Secondary Level

- Treatment of active eczema: Daily use of TCS of appropriate strength until completely clear ± antihistamine (for sedative/antipruritic effects) ± oral antibiotic course (if superinfection) - (refer to STW on rational use of topical therapy)
- Maintenance treatment for area where lesions are more resistant to treatment or there is propensity for relapse, like flexural skin- Intermittent use of mid-potency TCS (e.g. 2-3 days/week) and/or TCI (e.g. 3–5 days/week)

Tertiary Level

- Severe disease in addition to above may require phototherapy or systemic treatment (Short course of oral corticosteroids, cyclosporine, azathioprine etc.)

☛ AVOIDANCE OF PROVOKING AGENTS, MOISTURIZERS AND EARLY TREATMENT ARE THE AIM OF ECZEMA MANAGEMENT

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IMMUNOBULLOUS DERMATOSES

ICD-10-L13.8

WHEN TO SUSPECT?

- Appearance of fluid-filled, itchy or painful blisters (either flaccid or tense) on skin, over a normal or erythematous base
- Appearance of raw, erythematous erosions ± crusting on skin
- Appearance of erosions/ blisters inside oral cavity, eyes, nose and genitals

AUTOIMMUNE BLISTERING DISEASES

- Pemphigus vulgaris/ variants
- Pemphigus foliaceus/ variants
- Bullous pemphigoid
- Pemphigoid gestationis
- Mucous membrane pemphigoid
- Linear IgA bullous diseases/ chronic bullous disease of childhood
- Dermatitis herpetiformis
- Epidermolysis bullosa acquisita
- Bullous systemic lupus erythematosus

ADDITIONAL INFORMATION

- Age at onset and duration of blistering
- History of any recent drug intake
- History of prior varicella/ chicken pox
- History of similar illness in family
- History of itching, pain, burning
- Predominant sites affected
- Associated photosensitivity

EXAMINATION

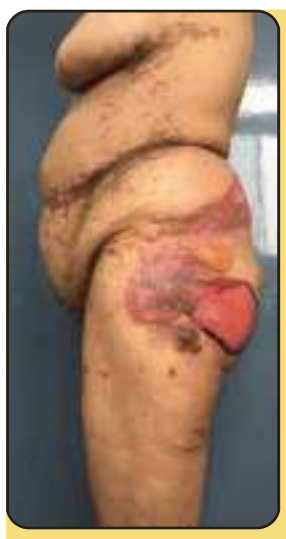
- Are the blisters flaccid or tense?
- Are the erosions crusted?
- Do the blisters contain clear or hemorrhagic fluid?
- Are the blisters umbilicated?
- Is the base of the blisters erythematous/ urticarial?
- Are the blisters healing with or without scarring?
- Are they healing leaving behind hyper/hypopigmentation?
- What is the color of the crust?
- Are mucosae involved?

DIAGNOSIS OF AUTOIMMUNE BULLOUS DISEASES

- **Likely pemphigus group of autoimmune bullous diseases**
  - Flaccid blisters/ erosions ± crusting on skin ± mucosae
  - Usually seen in adults; can rarely affect children
- **Likely sub-epidermal autoimmune bullous diseases**
  - Tense, small to large blisters, containing clear or hemorrhagic fluid, on an itchy erythematous base, commonly healing with hypopigmentation ± scarring
  - Seen in children, adults and elderly (most common is bullous pemphigoid)

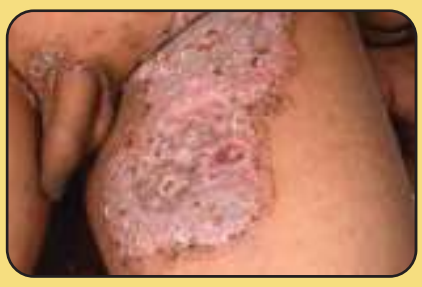
- Get a Tzanck smear
- Get a biopsy for histopathology from margin of a lesion
- Get a peri-lesional biopsy for direct immunofluorescence, if facility is available

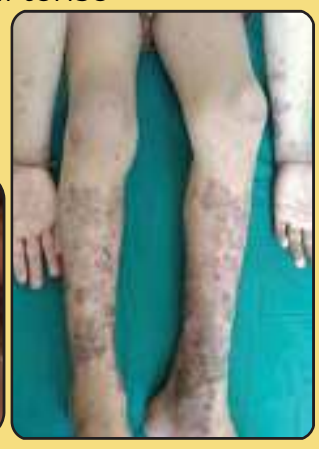
PEMPHIGUS



BULLOUS PEMPHIGOID

- Child < 5 years
- Erosions with peripheral tense blisters
- Urticarial base
- Face/ peri-genital involvement





CHRONIC BULLOUS DISEASE OF CHILDHOOD

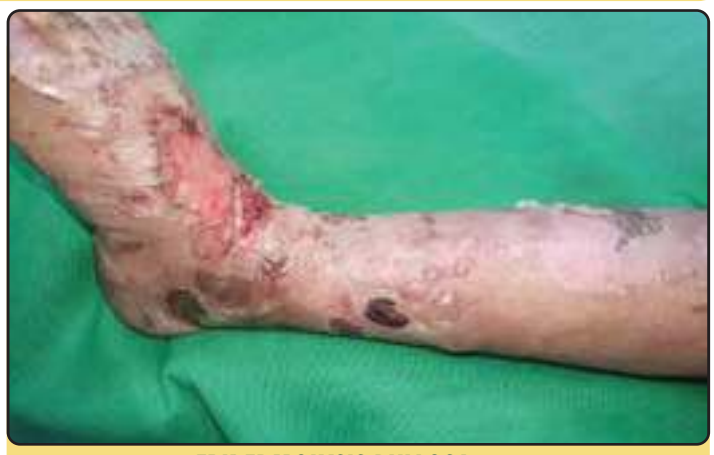
RED FLAG SIGNS

- Fever ± chills and rigors
- Hypotension (indicating hypovolemia due to fluid loss or sepsis)
- Altered sensorium (indicating dyselectrolytemia or sepsis)

DIFFERENTIAL DIAGNOSES

- **Bullous Impetigo, Varicella, Stevens Johnson Syndrome/TEN***
- **Epidermolysis bullosa,** a hereditary blistering disease with onset in neonatal period or infancy and predominantly affecting pressure sites; presence of scarring on limbs, acral areas, trunk and abnormality of the teeth or nails
- Consider **Congenital syphilis** in a neonate- get VDRL for mother and child

*Refer to STW on Bacterial Infections; Varicella and Herpes Zoster and cADR Part B



EPIDERMOLYSIS BULLOSA

GENERAL MEASURES

- Monitor temperature, respiratory rate, pulse rate
- Administer antibiotics if lesions are infected and foul smelling
- Fluid-electrolytes balance
- Get hemogram, basic biochemistry including renal and hepatic function tests, blood sugar
- Get pus culture and if sepsis is suspected, also blood culture
- Supportive management
  - Clean non-adherent dressings
  - Maintain hygiene with normal soap bath
  - Topical antibiotics
  - Aspiration of large blisters with 18G needle if needed
  - Avoid deroofing the blisters as the roof of the blister acts as a natural dressing

- Maintain oral hygiene (if involved)
  - Chlorhexidine mouth wash
  - Brush teeth with pediatric brush with small head and soft bristles
  - Avoiding eroding gingival margin
- Maintain skin hygiene (if involved)
  - Diluted potassium permanganate bath/ potassium permanganate compresses on localized lesions/ thick crusted lesions
  - Emollients/ coconut oil application
  - 2% savlon scalp wash
- Encourage oral intake (fluids and calories); consider other comorbidities
  - Liquid/ semisolid diet for oral erosions

PEMPHIGUS (START TREATMENT ONLY IF FACILITY FOR MONITORING AND MANAGEMENT OF COMPLICATIONS OF TREATMENT IS AVAILABLE)

- **Mucosal/ mucocutaneous with body surface area <5%**
  - Oral Prednisolone (0.5 mg/kg/day), with one or more of the following
    - Azathioprine (2-3 mg/kg/day)
    - Mycophenolate mofetil (35mg/kg/day, start at a lower dose)
    - Cyclophosphamide (1-2 mg/kg/day)
    - Methotrexate (0.3mg/kg/week)
    - Dapsone (100-150 mg/day)
- **Mucocutaneous with body surface area >5%**
  - At primary level-Stabilize patient, initiate general measures and refer to a specialist/ tertiary level
  - To be managed at a tertiary level
    - Dexamethasone- Cyclophosphamide pulse therapy
    - Rituximab

BULLOUS PEMPHIGOID (START TREATMENT ONLY IF FACILITY FOR MONITORING AND MANAGEMENT OF COMPLICATIONS OF TREATMENT IS AVAILABLE)

- **Limited (<10% body surface area)**
- Start treatment and refer to tertiary level
- Topical Clobetasol propionate (upto 30 gm/day)
- Oral Prednisolone (0.5 mg/kg/day) ±
  - Dapsone (100-150 mg/day)
  - Doxycycline (100- 200 mg/day)
  - Niacinamide (500 mg thrice/day)
  - Azathioprine (2-3 mg/kg/day, start at a lower dose)
  - Mycophenolate mofetil (35mg/kg/day, start at a lower dose)
  - Methotrexate (0.3mg/kg/week)
- **Extensive (>10% body surface area)**
- To be managed at a tertiary level
- Oral Prednisolone (0.75- 1 mg/kg/day) ±
  - Dapsone
  - Doxycycline
  - Niacinamide
  - Azathioprine
  - Mycophenolate mofetil
  - Methotrexate

CORRECT DIAGNOSIS; PREVENTION/ TREATMENT OF SEPSIS; AND REGULARITY OF TREATMENT BRINGS BEST RESULTS

July/ 2022

Department of Health Research
Ministry of Health and Family Welfare, Government of India

Standard Treatment Workflow (STW)

PSORIASIS

ICD-10-L40

*GENERAL PRINCIPLES OF MANAGEMENT

- Establish the diagnosis
  - Usually clinical and by bed side tests (Auspitz sign, Grattage test)
  - If in doubt, refer to higher centre for evaluation & skin biopsy
- Assess for psoriatic arthritis and metabolic syndrome (obesity, dyslipidemia, diabetes, hypertension)
- Counsel about variable natural course of disease and expected treatment outcome, and lifestyle modifications (including weight reduction, avoidance of smoking and alcohol)
- Assess for requirement of systemic treatment, in addition to topical treatment
- Advise regular use of emollients/ moisturizers. Antihistamines if pruritic
- Avoid Methotrexate and Cyclosporine A in children scheduled for live vaccines
- Rule out tuberculosis, HIV, Hepatitis B and C infections before systemic immunosuppressive treatment
- Pregnancy test-prior to systemic therapy (Acitretin avoided in child bearing age group)
- Systemic steroids should not be given for the treatment of psoriasis, except for generalized pustular psoriasis of pregnancy
- If first-line treatment options fail or are contraindicated, refer to tertiary care center for combination. Baseline investigations to be carried out

These principles should be used only as a general guide to choose a treatment; final decision should be made on case-to-case basis

TREATMENT OVERVIEW

TOPICAL THERAPY {<5% BODY SURFACE AREA (BSA)}

- Moisturizers like white soft paraffin
- Topical corticosteroids, Tacrolimus ointment, Tazarotene, Calcipotriol, Coal tar, Dithranol, Salicylic acid combinations

PHOTOTHERAPY (>5% BSA/ PALMOPLANTAR PSORIASIS)

- Narrow band UVB, Targeted phototherapy, Topical/systemic PUVA or Psoralens with sunlight (PUVAsol)

SYSTEMIC THERAPY (>5% BSA/ SEVERE RECALCITRANT DISEASE/ PALMOPLANTAR PSORIASIS/ ARTHRITIS)

- Methotrexate/ Cyclosporine A/ Retinoids-isotretinoin (may be preferred in adolescent girls), Acitretin/ oral antibiotics (guttate psoriasis)/ novel small molecules
- Resistant cases- Biologics

VARIANTS OF PSORIASIS

- PLAQUE PSORIASIS
- GUTTATE PSORIASIS
- PALMOPLANTAR PSORIASIS
- ERYTHRODERMIC PSORIASIS
- PUSTULAR PSORIASIS

PLAQUE PSORIASIS

Erythematous plaques with silvery white scales

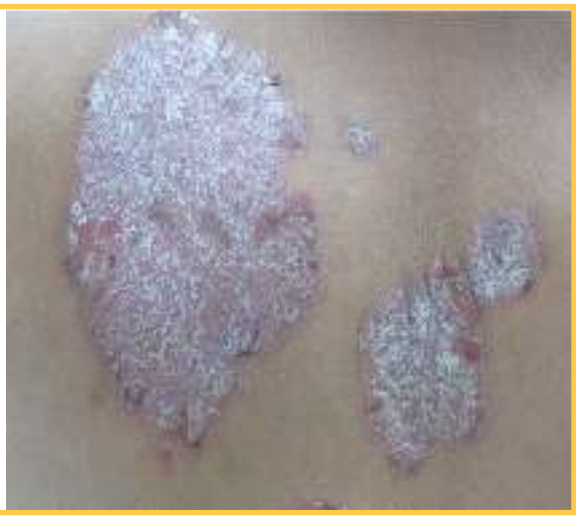
LIMITED PLAQUE PSORIARIS (< 5%)

PRIMARY/ SECONDARY LEVEL

- Face and flexures - 1% Hydrocortisone/ low potency steroid cream OD for 2 weeks
- Trunk and extremities - Betamethasone cream (or any other potent steroid, preferably with Salicylic acid 3-6%) OD for 2-4 weeks
- Other topical treatment as listed in treatment overview

TERTIARY LEVEL

- Continue with topical therapy
- If the patient does not respond in 6-8 weeks, try alternate topical agents and/ or systemic therapy or NB UV-B/ PUVA/ PUVAsol



GENERALIZED PLAQUE PSORIASIS

REFER TO GENERAL PRINCIPLES OF MANAGEMENT PREFERABLY TO BE MANAGED AT HIGHER CENTRE

- Systemic treatment- refer to treatment overview
- If these fail or are contraindicated, refer to tertiary level for combination or rotational therapy/ novel small molecules/ biologicals

- Continue emollients
- Avoid irritants & prolonged use of topical steroids

Scalp- Tar based shampoo and topical steroids +/- salicylic acid lotions

GUTTATE PSORIASIS

CLINICAL FEATURES

- Shower of numerous erythematous papules < 1 cm on the trunk and extremities
- Seen more commonly in younger patients

TREATMENT

REFER TO GENERAL PRINCIPLES OF MANAGEMENT*

Primary health centre/Level

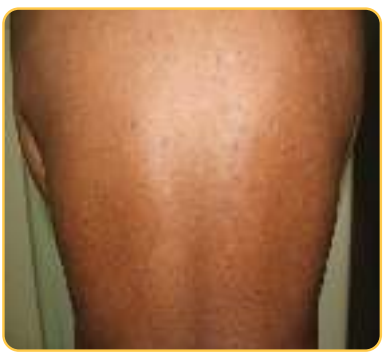
- Antibiotics for streptococcal infection

Secondary Level

- Same as primary level care
- Psoralen ultraviolet A Solar (PUVAsol)

Tertiary Level

- Same as primary level care
- Narrow band UVB
- Refractory cases- consider systemic treatments including novel small molecules



PALMOPLANTAR PSORIASIS

Chronic erythematous well defined plaques symmetrically on palms and soles, and occassional nail involvement to be differentiated from palmoplantar eczema

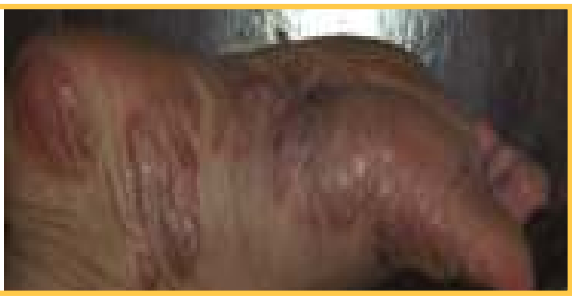
REFER TO GENERAL PRINCIPLES OF MANAGEMENT*

PRIMARY HEALTH CENTER

- Topical petrolatum at least twice daily
- Add antibiotics if signs of infection
- Potent steroid-salicylic acid combination Refer to higher center if not responding in 6-8 weeks

SECONDARY CARE HOSPITAL AND TERTIARY CARE HOSPITAL

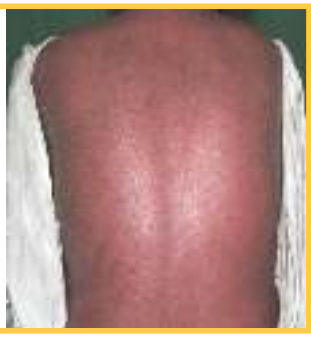
- In addition to those treatment prescribed at primary care
- Tar based applications/ steroid-salicylic acid with occlusion (if very thick plaques) for 2-4 weeks
- Phototherapy- Hand and foot NB UV-B/ PUVA soaks
- Systemic therapy - refer to treatment overview



ERYTHRODERMIC PSORIASIS

CLINICAL FEATURES

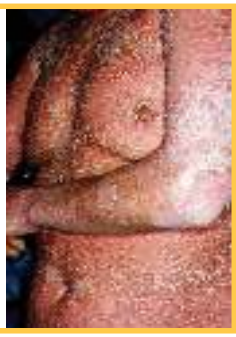
- Generalised erythema and scaling involving >90% of the BSA
- Triggered by withdrawal of systemic corticosteroids/ potent topical steroids or HIV infection
- Common D/D- dermatitis, drug reactions, pityriasis rubra pilaris, idiopathic erythroderma



PUSTULAR PSORIASIS

CLINICAL FEATURES

- Crops of localized or generalised sterile pustules and lakes of pus with surrounding erythema, often associated with fever
- In pregnancy- presents as impetigo herpetiformis,may lead to intrauterine growth retardation or still birth



GENERAL MANAGEMENT AT PRIMARY CARE

- Stabilize patient & treat secondary infection
- Maintain temperature/ fluid and electrolyte balance
- Admit if febrile & unstable vitals
- High protein diet
- Lab investigations: Complete Hemogram, Liver & Kidney Function test
- Refer to higher center for specific management

SPECIFIC MANAGEMENT

- Skin biopsy, if in doubt
- Methotrexate or Cyclosporine A
- Maintenance- Acitretin/ NbUVB/ PUVA
- If patient fails to respond, consider biologics

SPECIFIC MANAGEMENT

- Assess patient
- Take drug history (particularly Beta-lactams, Macrolides, Calcium channel blockers) to rule out acute generalized exanthematous pustulosis
- Generalized pustular psoriasis - admit the patient and follow general measures as for psoriatic erythroderma
- In addition to blood tests as listed previously, serum calcium (patients may have hypocalcemia) should also be estimated
- Acitretin/ Methotrexate/ Cyclosporine

PSORIASIS IS COMPLETELY TREATABLE BUT HAS A CHRONIC COURSE

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July/ 2022

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Standard Treatment Workflow (STW)

RATIONAL USE OF TOPICAL MEDICATIONS

TOPICAL CORTICOSTEROIDS (TCS)

- Most commonly prescribed topical medication in dermatology
- Because of quick results, it has high abuse potential
- Unmonitored use can cause both local and systemic adverse effects

GENERAL PRINCIPLES FOR TCS USE

- Before prescribing, make sure the dermatosis is steroid responsive
- Rule out fungal and bacterial infections at the local site
- Super potent and potent TCS usually, for a maximum duration of 2 weeks
- For children and over face- only low potency TCS
- For larger surface area, use finger tip unit (FTU) method for application of TCS
- For use over smaller area, less than 1 FTU maybe required; advise not to apply beyond the lesion

COMMON TOPICAL FORMULATIONS AND THEIR USAGE

Topical formulation	Key aspects of usage
Cream	Emulsion of oil and water; preferred for oozy/wet lesions
Ointment	Semi-solid, greasy, occlusive; preferred for better penetration, especially over thick keratotic lesions
Gel	Aqueous or alcoholic monophasic emulsion Liquefies upon contact with skin Preferred for greater cosmetic acceptance, and hairy areas
Lotion	Usually thicker than a solution and likely to contain oil/water/alcohol Use lotions over hairy areas and larger body surface areas
Aerosol foam/spray	A solution with pressurized propellant; alternative to lotion
Powder	Solid, for example, talc/corn starch; doubtful penetration/efficacy

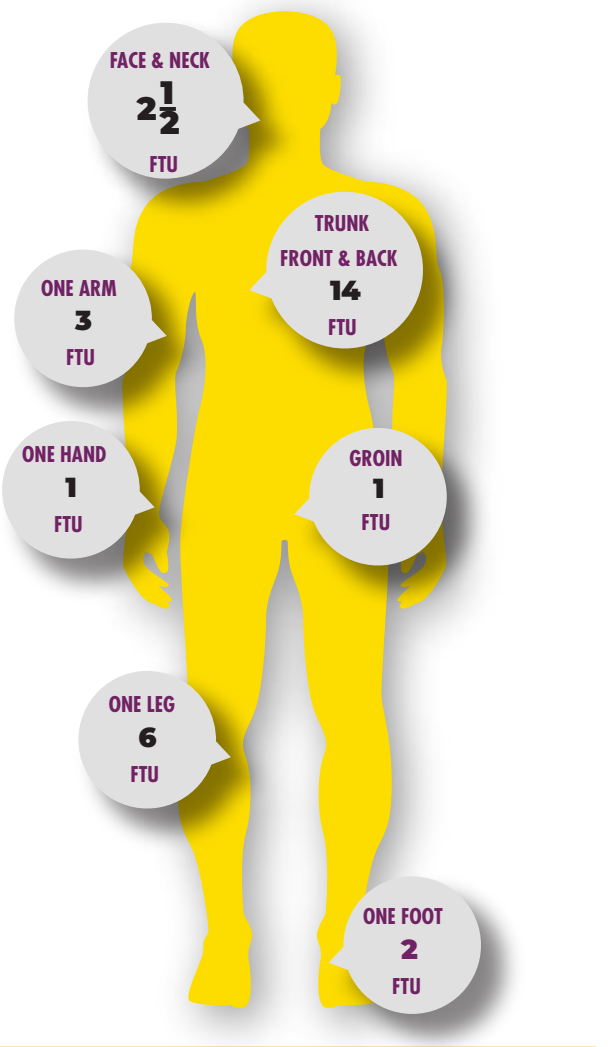
DOSE AND AMOUNT

- Educate the patient about the optimum quantity (in grams) of TCS required
- A single application to the whole body of an adult will require 20 to 30 g of product (cream/ointment/lotion)
- An area of one hand (palm and digits) will require 0.3 g per application
- No more than 45 g/week of potent or 100 g/week of a moderately potent TCS should be applied
- Treatment under occlusion should be avoided; only prescribed by specialists

FINGERTIP UNIT (FTU) METHOD FOR WIDESPREAD ECZEMA

1. Open the tube of medication
2. Extend your index finger facing up
3. Squeeze out a line of medication from the tip of your finger to the first skin crease. This is one fingertip unit (see below)

4. Apply the medication or the affected area

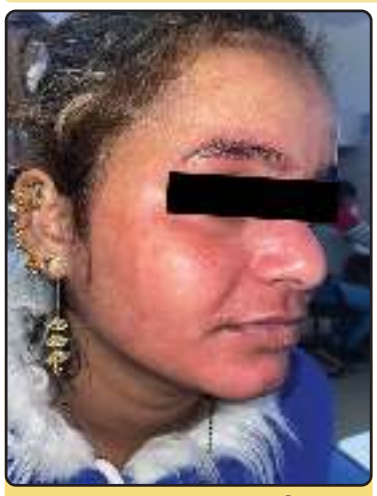


The figure shows the number of FTUs required for different areas of the body

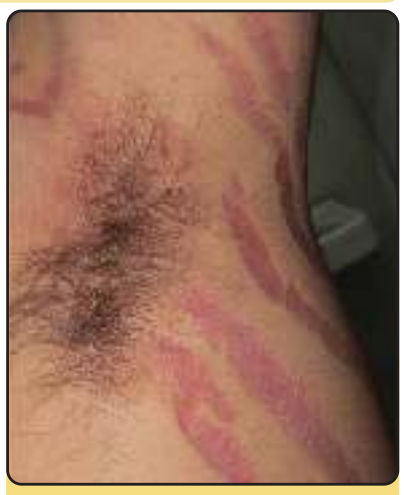
FEW ACCEPTABLE COMBINATIONS WITH TCS

Should be used only in specific situations and under strict supervision

- TCS+ Fusidic acid 2% cream/ointment (for impetiginized eczematous lesions)
- TCS + Salicylic Acid (3-6%) ointment (for thick hyperkeratotic eczema/psoriasis)
- Topical Calcipotriene-TCS (for mild to moderate psoriasis)
- Hydroquinone 2% + Tretinoin 0.025% + Fluocinolone Acetonide 0.1% Cream (use with great caution in melasma – high abuse potential)



TCS 'damaged' face



TCS induced striae

RATIONAL TOPICAL COMBINATIONS FOR ACNE

- Clindamycin 1%+Tretinoin 0.025% gel
- Adapalene 0.1% +Clindamycin phosphate 1%
- Clindamycin 1% + Benzoyl peroxide 5% cream
- Adapalene 0.1% + Benzoyl peroxide 2.5% gel

GENERAL PRINCIPLES FOR TOPICAL ANTIBIOTIC USE IN ACNE

- Benzoyl peroxide (BPO) alone, or in combinations with Retinoids/ Clindamycin are effective for mild acne, or in conjunction with a topical retinoid, or systemic antibiotic therapy for moderate to severe acne
- BPO is effective in the prevention of bacterial resistance and is recommended for patients on topical or systemic antibiotic therapy
- Topical antibiotics like Clindamycin are effective acne treatments, but are not recommended as monotherapy because of the risk of bacterial resistance

MOISTURIZERS

- One of the most commonly applied topical preparations for normal skin care and in diseased skin to improve barrier function of skin
- Moisturizer alone are therapeutic in conditions like eczema and psoriasis
- Bland, fragrance-free moisturizer should be preferred
- Moisturizers in common use – white soft paraffin/light liquid paraffin, glycerin with water, coconut oil

GENERAL PRINCIPLES FOR TOPICAL SUNSCREEN USE

- For photosensitive dermatoses like lupus erythematosus, liberal uniform film of sunscreen (2 mg/cm^2) should be applied on sun-expoxed sites, and application should be atleast 15 minutes before sun exposure
- Routine topical sunscreen use is not essential except in special situations with intense, prolonged sun exposure, such as mountaineering

TOPICAL STEROIDS ARE A DOUBLE EDGED SWORD - USE JUDICIOUSLY

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Standard Treatment Workflow (STW)

SCABIES

ICD-10-B86

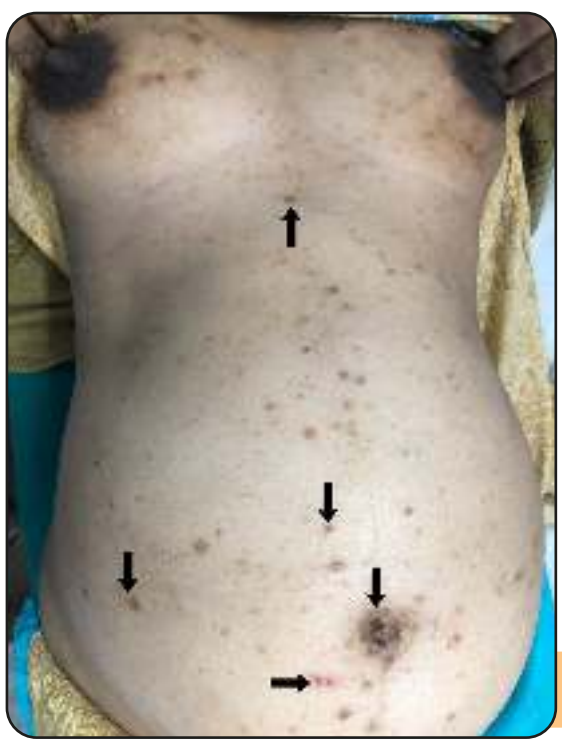
- Scabies is an infestation by a mite - *Sarcoptes Scabiei var hominis*
- Transmission occurs by skin to skin contact, sexual contact and infested fomites (like towels, clothes, beddings)
- Symptoms start 3-6 weeks after primary infestation but faster (2-3 days) after a re-infestation
- Multiple cases may occur in schools /orphanages and other such cluster settings

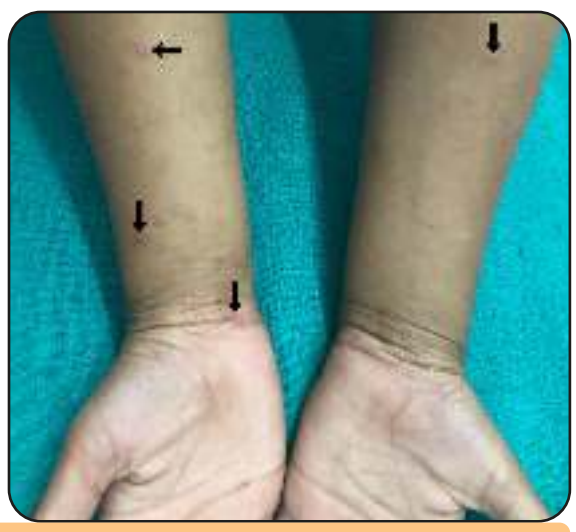
SYMPTOMS AND SIGNS

- Intense itch that is worse at night
- Other members of the family are often also affected
- Red, itchy papules and excoriations are seen mainly over fingers (interdigital spaces), wrists, periumbilical area, breasts, buttocks, axillary folds, waist, genitalia, and extensor aspects of the limbs
- The face, palms and soles are usually spared in adults; but typically involved in young children
- Burrow is the most characteristic lesion of scabies, but is often not observed
- Burrows should be looked for in web spaces and wrists and appear as thin, brown-grey lines of 0.5–1 cm
- Sometimes, vesicles are also seen
- Lesions may be sparse in those with a good hygiene

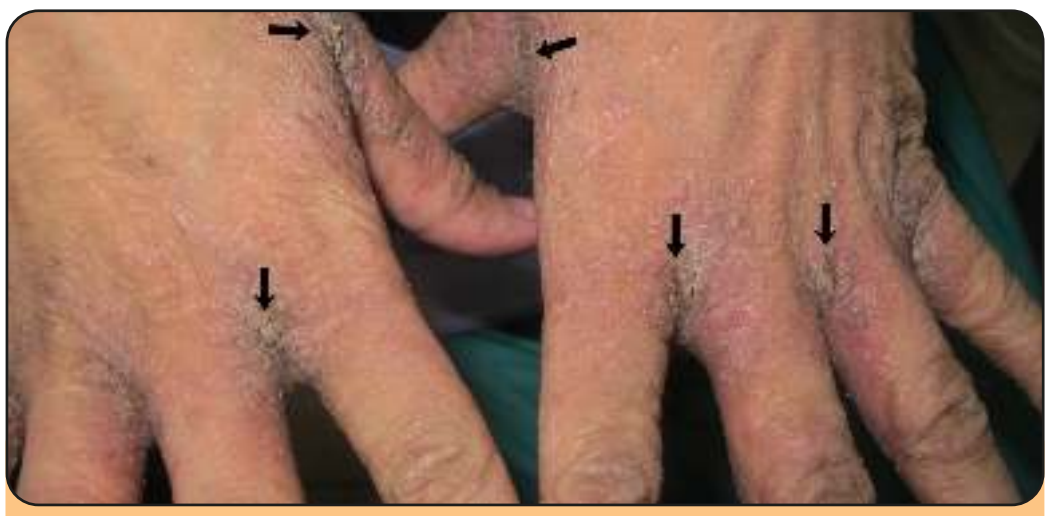
OTHER PRESENTATIONS

- Extremely itchy, persistent nodules may develop over male genitalia
- Secondary bacterial infection can occur in those with poor hygiene, especially in children
- CRUSTED SCABIES
  - Severe form of scabies that develops in those with predisposing factors such as immunosuppression (due to disease or drugs - including topical steroids), neurological disorders, or physical incapacitation or mental retardation- associated inability to scratch
  - Thick, yellow brown crusts form that are densely packed with mites
  - The thick crusts may be localised to hands and feet (including nails)





Excoriated papules at the typical sites – breasts, abdomen, web spaces of fingers and wrists



Crusting in finger webs in localised crusted scabies

DIAGNOSIS

- Diagnosis is usually clinical
- Demonstration of mite, mite eggs, or mite faeces (scybala) may be attempted from burrows (if visible) or by dermoscopy (if available) and from the thick crusts in case of crusted scabies (where mite is easily demonstrable)

Scabies mite in KOH smear (400X)

TREATMENT

GENERAL MEASURES

- All family members and close contacts must be simultaneously treated to prevent re-infestation
- The clothes and other fabrics such as towels and bed linen used by the patient in preceding three days must be washed with hot water and dried in the sun
- The items may also be kept sealed in a plastic bag for atleast 3 days (also useful for shoes and other non washable items)

Most patients are treated with topical alone

- **Permethrin 5% cream:** Apply over the whole skin surface (neck downwards) on dry and clean skin; wash off after 8-12 hours (advice to apply late evening and keep overnight)
- In infants, the face and scalp must also be treated
  - **Special attention** must be given to **interdigital webspaces, axillae, area under the fingernails and toenails the wrists the external genitalia and the buttocks**
  - To ensure 8 hours of contact time, Permethrin should be re-applied if hands are washed
  - **About 30 grams of cream is used for one application in adults and children ≥ 5 years; 15 grams for children < 5 years**
  - The application is to be repeated after 7–14 days
- **Alternatively, 1% Gamma Benzene Hexa-Chloride (GBHC/ lindane):** may be used for application as above for permethrin. Avoid use in infants

Oral treatment for patients with poor compliance or response to topicals therapy

- **Oral Ivermectin:** at a dose of 200 mcg/kg (upto 12 mg); two doses 1 week apart; taken with food
- **Avoid Ivermectin in infants, children < 5 years old or <15 kg, and in pregnancy. Permethrin has been safely prescribed in these situations**
- Antihistamines should be prescribed as per the patient's requirement

- **Treatment of secondary infection (Staphylococcal/ Streptococcal):** Refer to Bacterial skin infection STW
- **Treatment of crusted scabies:** Ivermectin on days 1, 2, 8,9 and 15 (additionally on days 22, 29 days in severe cases) with Permethrin 5% cream daily for 7 days, then twice weekly until cure. A keratolytic such as 3-6% Salicylic acid may be used over crusts
- **Nodular lesions:** Potent topical steroid (Clobetasol propionate) or intralesional steroid (Triamcinolone acetonide 10 mg/mL) may be required for persistent nodules

POST TREATMENT ADVISE

- *The patients must be explained that itching can continue for several weeks after successful treatment and repeated applications are not required; continue antihistamines for symptomatic management*
- *However, if itching persists for more than 3-4 weeks/ or if new lesions are noted - a reinfestation is likely. This can occur if all close contacts were not simultaneously treated*

TREAT THE ENTIRE SKIN, NOT LESIONS ALONE; TREAT THE FAMILY/CONTACTS, NOT THE PATIENT ALONE

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Standard Treatment Workflow (STW)

URTICARIA AND ANGIOEDEMA

ICD-10-L50.9

URTICARIA-CLINICAL APPEARANCE

- **Urticaria** -sudden appearance of wheals, angioedema, or both
- **A wheal**- A sharply circumscribed superficial central swelling of variable size and shape, surrounded by reflex erythema
  - Associated with itching / burning sensation and of fleeting nature- resolves within 1–24 hours
  - Chronic urticaria implies duration for more than 6 weeks
- **Angioedema**
  - Sudden, pronounced, erythematous or skin-colored swelling of lower dermis and subcutis with frequent involvement of mucous membranes
  - Associated pain, rather than itching /resolution is slower and can take up to 72 hours

CLASSIFICATION OF CHRONIC URTICARIA SUBTYPES
(presenting with wheals, angioedema, or both)

Chronic spontaneous	Inducible (mostly physical)
• Spontaneous appearance of wheals, angioedema, or both for ≥6 weeks	• Symptomatic dermographism • Delayed pressure urticaria • Cholinergic urticaria • Cold/Heat urticaria • Solar urticaria • Aquagenic urticaria • Contact urticaria

HISTORY

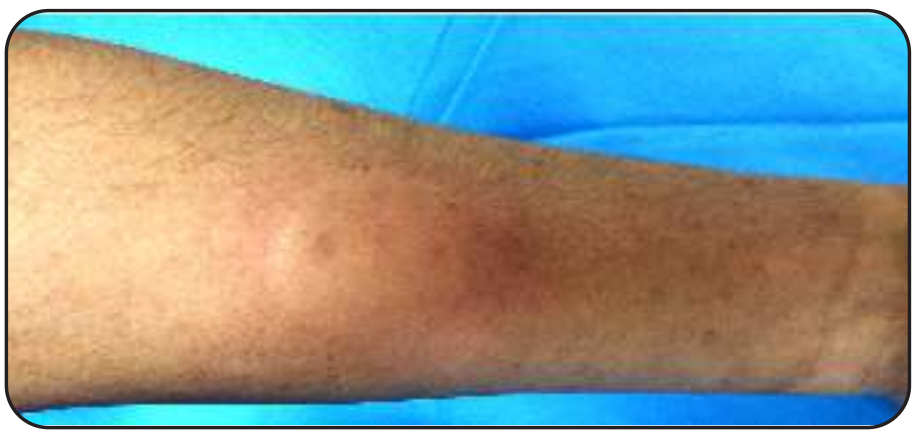
- Time to onset
- Frequency / duration
- Diurnal variation
- Associated angioedema
- Associated pain, itch
- Induction by physical agents or exercise
- Family history
- Previous allergies
- Surgical implantations
- Gastric / intestinal problem
- Drug history
- Correlation with food
- Correlation with menses
- Smoking
- Work profile
- Hobbies
- Stress
- Quality of life impact
- Response to therapy

EXAMINATION

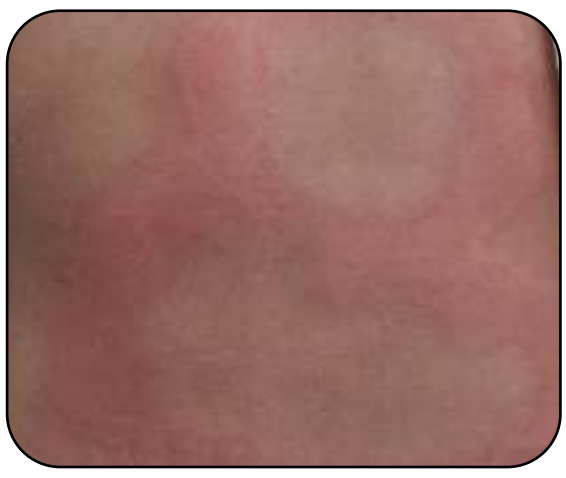
- Due to evanescent nature the examination may not show any lesions
- Presence of wheals of various sizes and shapes
- The lesions are non-scaly but show an intense erythema and a trailing clearing region in older areas which may lead to a target configuration in expanding plaques

DIFFERENTIAL DIAGNOSES OF URTICARIA

- Insect /Bedbug bites
- Urticarial vasculitis- painful, persist for 24-48 hours and fade to leave bruising; ± fever and arthralgia
- Pre bullous phase of bullous pemphigoid
- Maculopapular drug/ viral rash



URTICARIA



URTICARIAL VASCULITIS

INVESTIGATIONS

INVESTIGATIONS

Generally, no investigations are needed to confirm the diagnosis

- Skin biopsy may be indicated if other diagnoses are being suspected
- C4 and C1 inhibitor quantitation to detect C1 inhibitor deficiency may be done in suspected hereditary angioedema (Angioedema without urticaria)
- Tests for current or past viral, bacterial or parasitic infections should be guided by history and clinical findings
- Lab tests may be needed if patient is planned for immunosuppressive treatment
- **Certain investigations that are often ordered, but are of limited utility**
  - Thyroid function tests and antithyroid peroxidase (TPO) antibodies
  - Autologous serum skin test (ASST)
  - Skin prick / specific IgE test

GENERAL PRINCIPLES

- Reassure -remits spontaneously in 12-24 months in ~50% patients
- Treat with antihistamines. Reassure that prolonged treatment with long-acting, non-sedating antihistamines is not harmful
- Non-sedating antihistamines (e.g. Cetirizine 10mg, Levocetirizine 5mg, Loratadine 10mg, or Fexofenadine 180mg once daily) mainstay of treatment. Dose can be increased 4-fold safely if needed
- Long-term first generation antihistamines e.g. Chlorphenamine, Hydroxyzine avoided if possible due to risk of sedation and psychomotor impairment
- Avoid triggers including drugs such as NSAIDs, PCM, ACE inhibitors if history is suggestive of drug induced or exacerbated urticaria/ angioedema

TREATMENT

TREATMENT OF URTICARIA/ANGIOEDEMA* AT PRIMARY CARE LEVEL

First Line:
2nd generation non-sedating antihistamines

↓ *If symptoms persist after 2 weeks*

Second Line:
Increase dosage (upto fourfold) of 2nd generation antihistamines

↓ *If symptoms persist after 2–4 further weeks*

Refer to higher centre

- Severe urticaria with respiratory distress- maintain airway; injectable Hydrocortisone and Pheniramine (Avil) may be required
- Intra-muscular Adrenaline of 1:1000 dilution (1 mg in 1 mL), 0.2 to 0.5 mg (0.01 mg/kg in children; maximum dose: 0.3 mg) administered intramuscularly every 5 to 15 minutes if choking/respiratory distress/shock

** Angioedema with respiratory or laryngeal symptom requires emergency management -refer to higher center after vital stabilization; oral Prednisolone may be initiated to take care of biphasic response*

REFER TO A HIGHER CENTRE

- Patients whose urticaria is difficult to control with antihistamines despite fourfold higher dosage than the licensed doses of Cetirizine, Levocetirizine or Fexofenadine
- Patients with polypharmacy
- Unusual urticaria e.g. long lasting lesions >24-48 hours with bruising
- Associate angioedema that is unresponsive or presents with choking/ dyspnoea
- Investigations not available

MANAGEMENT AT SECONDARY CARE LEVEL

First Line:
2nd generation antihistamines

↓ *If symptoms persist after 2 weeks*

Second Line:
Increase dosage (upto fourfold) of 2nd generation antihistamines

↓ *If symptoms persist after 2–4 further weeks*

Add third line on to second line:
Cyclosporine A (3-5 mg/Kg) or Montelukast (10 mg HS)
Short course (max 10 days) of corticosteroids
(Prednisolone-0.3-0.5 mg/kg)#

MANAGEMENT AT TERTIARY CARE LEVEL

First Line:
2nd generation antihistamines

↓ *If symptoms persist after 2 weeks*

Second Line:
Increase dosage (upto fourfold) of 2nd generation antihistamines

↓ *If symptoms persist after 2–4 further weeks*

Third line:
Add on to second line Omalizumab (300mg s/c every 4 weeks)
or Cyclosporine A or Montelukast
Short course (max 10 days) of corticosteroids #

#Oral or injectable conticosteroids are generally not used, except in uncontrolled disease or with associated respiratory symtoms

URTICARIA TREATMENT GOAL IS DISEASE REMISSION-NOT CURE

This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit the website of DHR for more information: (**stw.icmr.org.in**) for more information.

July/ 2022

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Standard Treatment Workflow (STW)

VARICELLA & HERPES ZOSTER

ICD-10-B01-02

VARICELLA (CHICKEN POX)

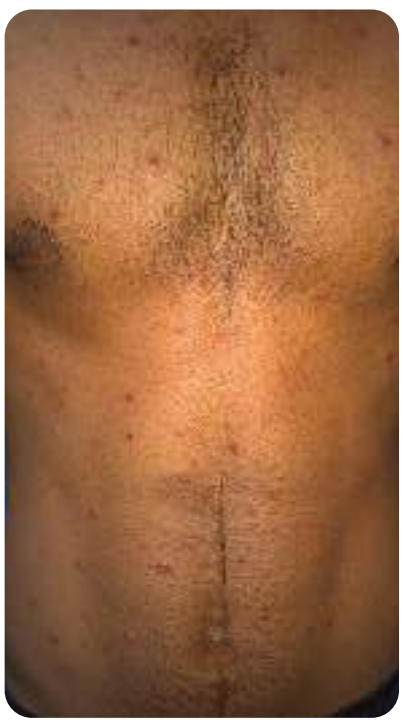
WHEN TO SUSPECT?
- Fever, malaise
- Generalized vesicular lesions on erythematous base (dew drop on a rose petal sign)
- Skin lesions in different stages of evolution: erythematous macules, papules, vesicles and crusted lesions

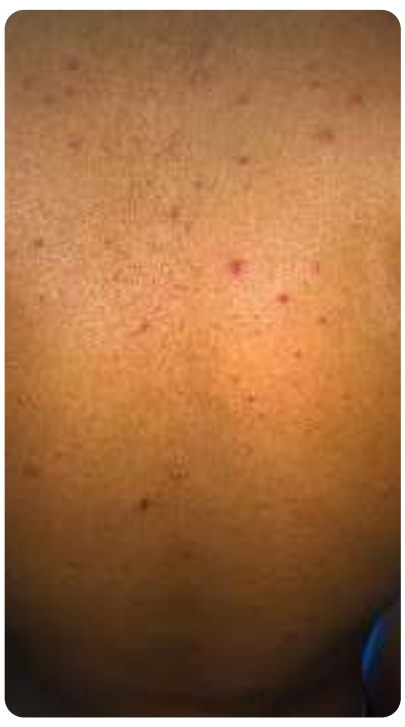
TAKE HISTORY OF
- Recent contact with a patient with varicella
- Past history of varicella/ varicella vaccination
- Immunosuppression (especially if second episode of varicella): malignancy, HIV/AIDS, transplant recipient

PREGNANCY AND VARICELLA
- Infection in 1st 20 weeks may lead to congenital varicella syndrome
- Treat with acyclovir
- Maternal perinatal varicella may lead to neonatal varicella; initiate treatment and refer to a specialist

RED FLAG SIGNS AND SYMPTOMS
- Hemorrhagic vesicles
- Difficulty in breathing
- Chest pain
- Abdominal pain
- Stiff neck, confused behaviour (CNS symptoms)
- Hemodynamic instability

INVESTIGATIONS
- As per availability and need:
  - Tzanck smear: from a fresh vesicle- will show multinucleate giant cells and acantholysis
  - Symptom directed: Chest X-ray, ECG, ECHO, transaminases, renal function test, brain imaging
- Optional
  - VZV PCR – skin swab
  - Skin biopsy





TREATMENT
- General measures
  - Isolate the patient from high risk contacts
  - Daily bath with soap
  - Antipyretics: Paracetamol; avoid aspirin as it is associated with Reye's syndrome in children
  - Antihistamines
- Specific treatment*
  - Adults/children >40kg: Oral Acyclovir- 800mg, 5 times a day for 5-7 days
  - Children <40kg: (20mg/kg/dose) max 800mg four times a day for 7 days
  - Alternative (if available): Valacyclovir (adults-1g TDS)
  - Give intravenous Acyclovir (10mg/kg/dose 8 hourly) if:
    - Systemic complications
    - Hemorrhagic varicella
    - Immunosuppressed patient
    - Neonatal Varicella (higher dose may be required)

**Infants, children >12 years of age, adults, pregnant women and immunosuppressed patients should be treated with specific anti-viral medication because of risk of severe varicella*
**Maximum benefit if acyclovir initiated 24 hours of onset of rash*

COMPLICATIONS
- Secondary skin infections
- Pneumonia
- Encephalitis
- Hepatitis
- Pancreatitis
- Myocarditis
- Reye's syndrome

WHEN TO REFER TO A HIGHER CENTRE
- Diagnosis in doubt
- Systemic complications
- Hemodynamic instability
- Hemorrhagic varicella
- Not responding to oral Acyclovir
- Immunosuppressed patient
- Neonatal varicella syndrome

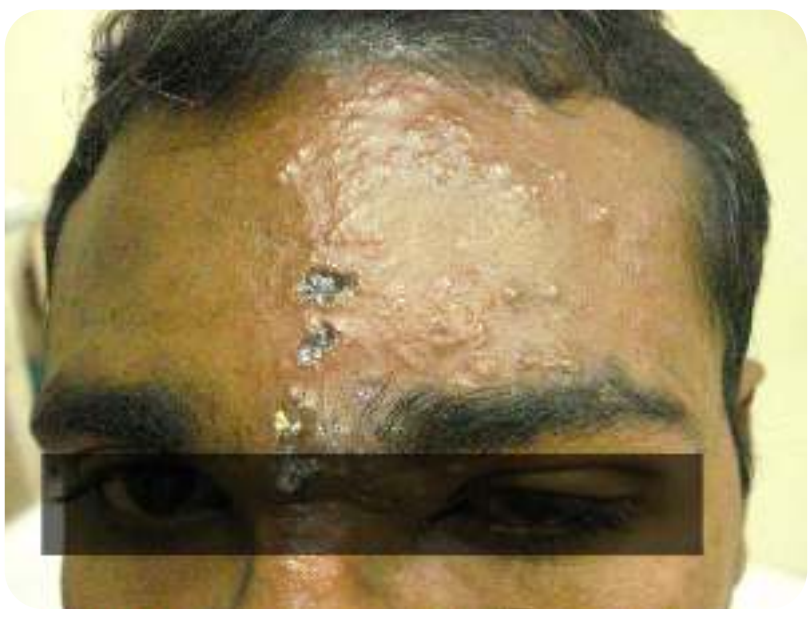
HERPES ZOSTER

WHEN TO SUSPECT?
- Acute, grouped, vesiculo-pustular eruption in a dermatomal distribution
- Dermatomal pain

TAKE HISTORY OF
- Previous varicella
- Previous episode of herpes zoster
- Immunosuppression: Diabetes mellitus, malignancy, transplant recipient, HIV

RED FLAG SIGNS
- V1 dermatomal involvement: forehead, periorbital, nose tip: risk of eye involvement - look for watering of eye, redness, photophobia
- Lesions on the ear or inside the ear canal: risk of facial/vestibulocochlear nerve palsy - look for vertigo, tinnitus, hearing loss, facial asymmetry/weakness
- Multi-dermatomal involvement
- Disseminated herpes zoster
- Hemorrhagic/necrotic lesions

INVESTIGATIONS
- Diagnosis is usually clinical
  - Tzanck smear: from a fresh vesicle- will show multinucleate giant cells and acantholysis
- Optional
  - PCR from vesicular fluid



TREATMENT
- Analgesics: Acute pain relief with NSAIDs.
- If uncontrolled, add the following (step wise):
  - a) Pregabalin 150-600mg/day, start with 150mg HS and titrate up as required
  - b) Gabapentin: start with 300mg/day, gradually increase upto 1800mg/day; more adverse effects than pregabalin
  - c) Amitriptyline: 10-25mg HS
  - d) Nortryptyline: start with 10-25mg/day; gradual increase upto 30-75mg/day in divided doses or HS
  - e) Carbamazepine 200 mg HS to start with
- Specific treatment*
  - Acyclovir **800mg five times a day x 7 days or
  - Valacyclovir 1gm three times a day x 7 days

**Start <72 hours of onset for maximum benefit, can consider if new lesions are still appearing after 72 hours/ Herpes Zoster ophthalmicus/Ramsay Hunt syndrome*
***Intravenous Acyclovir if multi-segmental involvement or disseminated zoster or systemic complications*

COMPLICATIONS
- Secondary skin infections
- Herpes zoster ophthalmicus: risk when lesions present over side/tip of nose (Hutchinson's sign)
- Ramsay Hunt syndrome: Facial nerve palsy (with vesicles in the ear canal)
- Aseptic meningitis, encephalitis: In elderly and immunosuppressed mainly
- Post-herpetic neuralgia (pain persistent for more than three months, common in elderly)

WHEN TO REFER TO A HIGHER CENTRE
- Multi-dermatomal distribution/ disseminated Herpes Zoster syndrome
- Systemic complications
  - Facial nerve palsy
  - Eye involvement
  - Neurological involvement
- Post-herpetic neuralgia

PREVENTION

VARICELLA
- **Active immunization (live vaccine)**
  - <13 years old: 1st dose at 12-15 months, 2nd dose at 4-6 years
  - >=13 years old: 2 doses weeks apart
- **Passive immunization**
  - Varicella zoster immunoglobulin may be considered where active immunization is contraindicated (pregnant women, immunosuppressed patients)

HERPES ZOSTER
- Active immunization may be offered to patients >50 years old, irrespective of previous history of herpes zoster

INITIATE SPECIFIC ANTIVIRAL TREATMENT AT THE EARLIEST TO PREVENT COMPLICATIONS

July/ 2022

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Standard Treatment Workflow (STW)

VITILIGO

ICD-10-L80

Vitiligo is an acquired skin disease characterized by depigmented (white) macules, with a global prevalence of 1-2%

NON-SEGMENTAL VITILIGO

GENERALIZED VITILIGO
- Lesions in a generalized distribution, usually affecting trunk, extremities and face
- No predilection for any specific site; also called vitiligo vulgaris

ACROFACIAL VITILIGO
- Affects the distal extremities and/or face/genitals
- Less responsive to treatment

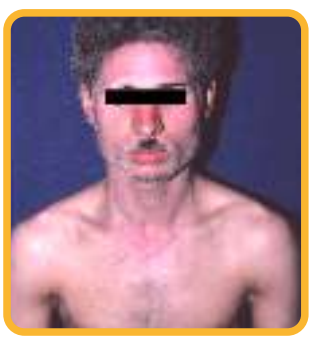
OTHER VARIANTS
- Focal
- Follicular
- Mucosal
- Universal ≥ 80% of body surface area involvement

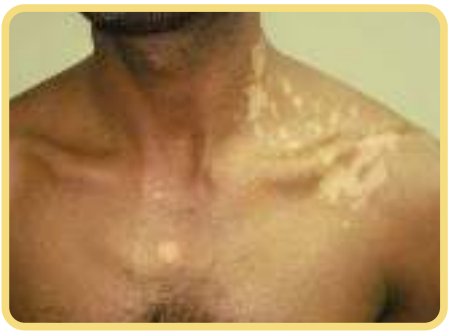
SEGMENTAL VITILIGO
- Unilateral with a midline demarcation
- Onset in childhood
- Leucotrichia both within and beyond the lesion
- Usually stabilizes within a year after an initial period of progression
- Response to medical treatment is variable and most patients may require surgical treatment


Generalized vitiligo


Progressive vitiligo with Koebner's phenomenon


Acrofacial vitiligo


Universal vitiligo


Segmental vitiligo

GENERAL PRINCIPLES OF MANAGEMENT

- Diagnosis is clinical
- Educate patient about the disease
- Assess the psychosocial impact of vitiligo and counsel about the variable/ unpredictable course of disease & expected response to treatment
- In pregnancy, prefer only topical corticosteroids
- **Decide the treatment plan based on**
  - A. **Disease activity**
    - Progressive: new lesions, or spread of existing lesions
      - Rapidly progressive: >5 new lesions in last 1 month, or >15 lesions in last 3 months
      - Slowly progressive: <5 new lesions in last 1 month, or < 15 lesions in last 3 months
    - Stable: no new lesions, no spread of existing lesions
  - B. **Extent of involvement:** limited (≤5%) or extensive (>5%)
- **Limited stable/slowly progressive vitiligo:**
  - Topical treatment- Mid-potent/potent corticosteroids, tacrolimus, topical PUVA/PUVAsol *(Avoid prolonged use)*
- **Extensive stable/slowly progressive vitiligo:**
  - Narrow-band ultraviolet B (NbUVB), oral Psoralen + Ultraviolet A (PUVA)/PUVAsol
  - Rapidly progressive vitiligo (limited or extensive):
  - Oral corticosteroids (minipulse) and/or
  - Azathioprine/ Methotrexate
- **Non-responders:**
  - Consider combining different modalities if unsatisfactory response with monotherapy
  - **Consider** surgical treatment for stable limited vitiligo/ segmental vitiligo (unresponsive to medical treatment)
  - Consider camouflage for poorly responsive vitiligo lesions
- **Monitoring of patients on systemic treatment**
  - Height (children), weight, blood pressure and blood sugar in patients on oral corticosteroids
  - Complete Hemogram, Liver Function Test in patients on drugs such as Azathioprine, Methotrexate

COMMON DIFFERENTIAL DIAGNOSES

- **Leprosy**
  - Hypopigmented, not depigmented macules
  - Overlying sensory loss
  - Enlarged peripheral nerves
- **Pityriasis alba**
  - Hypopigmented scaly lesions usually on a child's face
- **Nevus depigmentosus**
  - Present since birth or early childhood
  - Single hypopigmented macule/ segmental lesion

IMPORTANT COUNSELLING POINTS

- Not the same as leprosy
- Does not spread by touch
- Not caused by certain foods such as milk, curd, lemon, fish etc
- Treatment is available for vitiligo
- Multifactorial, predominantly autoimmune

TREATMENT

REFER TO GENERAL PRINCIPLES OF MANAGEMENT

		Primary /secondary Level	Tertiary Level
Acrofacial vitiligo	**Stable**	• **Face, flexures, genitals**: Tacrolimus 0.1% ointment BD • **Other body sites**: Betamethasone valerate/ Mometasone/ Fluticasone/ Fluocinolone cream OD (clobetasol NOT to be used) • Refer non-responders to higher center after 3 months	• Same as in primary/secondary care • Topical PUVA/PUVAsol • Handheld NbUVB • Targeted phototherapy/Excimer LASER • Surgical management – minipunch grafting, suction blister epidermal grafting, noncultured epidermal suspension
	Progressive	Refer to higher center	• Topical PUVA/PUVAsol/ Handheld NbUVB (slowly progressive) • Levamisole (slowly progressive) • Oral steroid (minipulse) and/or Azathioprine/Methotrexate (rapidly progressive)
Generalized vitiligo	**Stable**	• **Face, flexures, genitals**: Tacrolimus 0.1% ointment BD • **Other body sites**: Betamethasone valerate/ Mometasone/ Fluticasone/ Fluocinolone cream OD (clobetasol propionate NOT to be used) • Refer non-responders to higher center after 3 months	• Same as in primary/secondary care • Oral PUVA/PUVAsol • Whole body NbUVB
	Progressive	Refer to higher center	• Oral PUVA/PUVAsol/ whole body NbUVB (slowly progressive) • Levamisole (slowly progressive) • Oral steroid (minipulse) and/or Azathioprine/Methotrexate (rapidly progressive)
Universal vitiligo		• Sunscreen/photoprotection • Refer to higher center	• Sunscreen/photoprotection • Depigmenting agent like monobenzyl ether of hydroquinone 20% may be considered if patient wishes for complete depigmentation
Segmental vitiligo		**Face, flexures, genitals**: Tacrolimus 0.1% ointment BD • **Other body sites**: Betamethasone valerate/ Mometasone/ Fluticasone/ Fluocinolone cream OD (clobetasol propionate NOT to be used) • Refer non-responders to higher center after 3 months	• Same as in primary/secondary care • Topical PUVA/PUVAsol • Handheld NbUVB • Targeted phototherapy • Surgical management – minipunch grafting, suction blister epidermal grafting, noncultured epidermal suspension

VITILIGO CAN BE TREATED. TREATMENT DEPENDS ON EXTENT AND ACTIVITY OF DISEASE

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